WASHINGTON STATE POLLUTION CONTROL HEARINGS BOARD
ENVIRONMENTAL HEARINGS OFFICE
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"Your Right to Be Heard"

This is your informal guide to your rights and responsibilities in an appeal. It is not exclusive and **does not have force and effect of state law or regulation.** ALTERNATE FORMAT AVAILABLE UPON REQUEST. More detailed information, in a chapter of the Washington Administrative Code entitled, "Rules of Practice and Procedure of the Pollution Control Hearings Board, WAC 371-08," is available at your county law library or upon request.

YOUR RIGHT TO BE HEARD

The Pollution Control Hearings Board (PCHB) hears appeals from orders and decisions made by:

1. Local and regional air pollution control agencies or authorities.
2. The State Department of Ecology, and
3. Other agencies as provided by law.

The Board's sole function is to give you, and all other litigants in the matter, a full and complete public hearing, as promptly as possible, followed by a fair and impartial written decision based on the facts and law.

The Board is not affiliated with Department of Ecology or any other agency. To insure the Board's impartiality, the state Legislature created this independent, quasi-judicial state agency entirely separate from any other state, regional or local unit of government.

The Board consists of three full-time members, who are appointed by the governor and confirmed by the State Senate for staggered six-year terms. One of the three must be an attorney. All are salaried employees of the State, who also serve on the Shorelines Hearings Board.

DO YOU NEED AN ATTORNEY?

You may be represented by an attorney, but one is not required by law. However, you might want to consider whether a lawyer would be helpful, before you decide to represent yourself.

WHEN & WHERE TO FILE AN APPEAL

The Board must RECEIVE your appeal within 30 days of the date that the copy of the order or decision was communicated to the appealing party.

You must also serve, within 30 days, a copy of your appeal with the Department or Air Pollution Authority or other agency whose order or decision you are appealing.

If it a permit you are appealing, such as a water right, you should also serve a copy of your appeal on the holder of the permit unless you are the permittees.

Failure to observe the thirty (30) day deadline for filing with the Board and serving the Department or Air Pollution Control Authority or other agency will result in dismissal of the appeal.

CONTENT OF THE APPEAL

You need to supply the Board, in writing, with:

Your name and address (mailing and legal, if different) and, if applicable, the name and address of your representative.
A daytime phone number.
A copy of the order or decision you are appealing, and if the order or decision followed an application, a copy of the application.
A brief statement why you are appealing.
The relief you seek (what you want the Board to do).
A statement, signed by you or your representative, attesting that the content of the appeal is true.

IF YOU ARE NOT AN APPELLANT

Perhaps you have been granted a permit by the Department of Ecology, air authority or another agency, but another party has appealed. You have a right to defend the permit and are automatically a respondent in the appeal before the Board. All subsequent sections in this publication apply to you as well as to the appellant.

HEARING DATES

When an appeal is filed, the Board will assign and notify you of a date, time, and location for hearing the case.

THE PRE-HEARING CONFERENCE

Soon after the appeal is filed, a date and place for the pre-hearing conference are selected. It is usually held within 6 weeks. The conference has two main purposes: to help reach a settlement, and to prepare the case for hearing if settlement is not reached. The parties should come to the conference prepared to present a preliminary list of legal issues, proposed witnesses and exhibits.

CAN THIS DISPUTE BE SETTLED?

Litigation is time and energy consuming for the parties. Each party needs to think about possible compromise. For settlement to be reached, each side needs to offer something. Litigants are encouraged to begin settlement talks, without waiting for Board participation.

The Board has a mediation program to assist parties in reaching settlement. If the parties settle, a written document containing the settlement terms will ultimately be signed by all, and filed with the Board, which may decide to dismiss the appeal if the settlement conforms to the law.

BEFORE THE HEARING

Before the hearing you will want to prepare. You have the right to review the agency's file of their decision. Contact them to arrange a time and place to see the file.

You and the other litigants have the right to find out in advance what witnesses and other evidence will be used at the hearing. This may be provided to you without formal procedures, such as by looking at public records. If done formally, this is known as **discovery** and is best accomplished with the assistance of a lawyer. Examples of formal discovery are: **Deposition**-questioning witnesses before the hearing, under oath with a court reporter present. **Interrogatory**-presenting written questions to the other side. There are formal rules that apply to discovery.

HEARING

At the hearing, it is important to be **on time**. An appellant's failure to appear may result in dismissal of the appeal.

The second thing to do is **relax**. You will have your full opportunity to tell your side of the case, but there is a court procedure to be followed, so that all sides can be heard in an orderly manner.

The Presiding Officer for the Board manages the proceedings. A court reporter will record what is said. The appellant usually has the obligation to present his or her case first. Then, the respondents will present their case.

Each side has the right to make an **opening statement**, briefly outlining what its evidence will be. **Witnesses** who are sworn to tell the truth, testify from their personal knowledge in response to questions. After **direct** testimony, the witness answers questions asked by the other side during "**cross-examination**". The Board members may also ask questions.

Persons essential to your case need to be present at the hearing to testify as witnesses, as the "hearsay" rule prevents you from testifying for them.

Exhibits, such as letters, maps, etc. may be offered as evidence. Before the hearing, number your exhibits and prepare an exhibit list. At the hearing, you will need to have the original and copies for each member of the Board, and for the other parties.

After all the evidence has been presented, litigants can summarize their arguments in closing statements.

THE BOARD'S DECISION

The Board will deliberate on the testimony, exhibits, and final arguments, before issuing a written decision.

The written decision called "Findings of Fact, Conclusions of Law and Order" is prepared and mailed to all litigants generally within ninety (90) days.

YOU MAY APPEAL THE FINAL ORDER

The Board's decision may be appealed to Superior Court within thirty (30) days from the date of the **ORDER**, or you may file a petition with the Board for a reconsideration within ten (10) days of the date of the **ORDER**

FREQUENTLY USED TERMS

BOARD: The Washington State Pollution Control Hearings Board.

DEPARTMENT: The Washington State Department of Ecology (DOE).

PERSON OR PERSONS: A citizen, a business firm, an association or a government agency.

APPEAL: A request for review of a decision filed with the Board.

APPELLANT: A person or persons bringing the appeal.

RESPONDENT: A person or entity on the other side of the dispute.

LITIGANTS: All parties to the action.

STIPULATION: An agreement by the parties.

MITIGATED: Reducing, diminishing or lessening either the penalty or the impact of the proposed action.

AIR POLLUTION CONTROL AUTHORITY: a local or regional agency authorized under the Washington Clean Air Act, RCW 70.94, to issue orders and assess penalties for air pollution violations, and to issue notices of construction for new air emission sources.

The Environmental Hearings Office does not discriminate in employment or any of its services against persons with disabilities, and will make reasonable accommodations for any citizen who needs assistance to participate in our hearings or other activities.

Judy/Office/PCHBPAMP 10/07/02

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

June 30, 2003

CERTIFIED MAIL

Puget Sound Energy Inc
PO Box 97034 Mailstop OBC-14N
Bellevue WA 98009-9734

Dear Sir or Madame:

Re: Surface Water Application No. S2-29934

Your application has been approved. A permit will be issued after the required 30-day appeal period and upon payment of the statutory fee. Enclosed is the Report of Examination summarizing our findings and recommendations.

Please send your permit fee of $600.00 within thirty (30) days. Make your check payable to the Department of Ecology.

This order may be appealed. Your appeal must be filed with the Pollution Control Hearings Board, PO Box 40903, Olympia, WA 98504-0903 within thirty (30) days of the date this decision was mailed. At the same time your appeal must be sent to the Department of Ecology c/o Water Resources Appeal Coordinator, PO Box 47600, Olympia, WA 98504-7600. Your appeal alone will not stay the effectiveness of the Order. These procedures are consistent with Chapter 43.21B RCW.

Sincerely,

Thomas Loranger

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

TL:th (exam2)
Enclosure

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☒ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☐ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
September 15, 2002	S2-29934		

NAME
Puget Sound Energy Inc

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 97034 Mailstop OBC-14N	Bellevue	Washington	98009-9734

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Lake Tapps

TRIBUTARY OF (IF SURFACE WATERS)
White River

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
150		72400

QUANTITY, TYPE OF USE, PERIOD OF USE

61400 Acre-feet per year	Public Water Supply (Including Industrial & Commercial)	Year-round, as needed
11000 Acre-feet per year	Source Exchange (Public Water)	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
Final intake location to be determined.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼ NE¼	8	20	5E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The POU includes all King County UGA's and Utility Service Areas identified in the Central Puget Sound Regional Water Supply Outlook (Outlook), the Pierce County UGA's and Utility Service Areas in the Outlook except the Cities of Dupont, Eatonville, Roy, the Fort Lewis and McChord military bases, and the McKenna, Southwood, Graham Hill, Eldorado, and Chinook water systems. The POU also includes the Olympic View Water District in Snohomish County that is partially supplied by the Seattle Public Utilities (SPU) and the Gig Harbor peninsula.

DESCRIPTION OF PROPOSED WORKS

Lake Tapps Water Supply Project.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
December 31, 2016	December 31, 2024	December 31, 2036
December 31, 2016 (Phase II)	December 31, 2040	December 31, 2053

REPORT

See attached

6/30/03
Report of Examination
Lake Tapps Reservoir Water Supply Project Application
S2-29934

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III. LIST OF FIGURES

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TM 1 Fig 1-2	White & Puyallup Rivers and Lake Tapps Reservoir Schematic Plan
TM 16 Fig 4-3	Potential Minimum Instream Flow Requirements Included in the Lake Tapps System Model.
TM 8	Proposed Place of Use Exhibit
Ecology*	Comparison of Ramped and Stepped Interpretations of Puyallup River MIFs
TM 16 Fig 7-1	Lake Tapps Reservoir Hydropower Rule Curve Modeling Assumptions
TM 26 Fig 5-1	Simulated hourly tailrace canal release and streamflow in the lower White River (RM 1.2) and Puyallup River (RM 5.6) for normal fall low flow conditions, FERC 2494 minimum instream flows (MIFs), and fall maximum water supply demand
HDR 2002b Fig 12	Statistical summary of change in mean daily streamflow (project minus Baseline scenario) for the normal hydroclimate scenario and FERC 2494 MIFs
TM 25 Fig 6-11	Relative frequencies of volume-averaged salinity for the period 1-June through 30-September for the normal hydroclimate scenario and the fall maximum water supply demand

HDR 2002b Fig 7	Simulated tailrace canal release and downstream stage for normal spring flow conditions, FERC 2494 MIFs, and spring maximum water supply demand
HDR 2002b Fig 6	Simulated tailrace canal release and downstream stage for normal fall low flow conditions, FERC 2494 MIFs, and fall maximum water supply demand

*Indicates Ecology generated Figure or Table for this ROE.

IV. LIST OF TABLES

ROE Table #	Source	Table Title
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Table 5	Ecology*	State Water Quality Standards
Table 6	Ecology*	Predicted General Effects of WSP on Lower White River Relative to Baseline Conditions
Table 7	Ecology*	Categories for Describing Estuarine and Marine Environments Based on Salinity (after McLusky 1993)
Table 8	Ecology*	Base Model Prediction of Instream Soluble Reactive Phosphorus (SRP) Concentration; Municipal Effluent Limit = 100 µg/L

*Indicates Ecology generated Figure or Table for this ROE.

ARTICLE II. 1.0 INTRODUCTION

Puget Sound Energy (PSE) has submitted three interrelated water right applications to the Washington State Department of Ecology (Ecology) for the purposes of developing a proposed water supply project (hereafter WSP) to provide public water supply and municipal water supply including industrial and commercial purposes.

1. Surface Water Application S2-29920 (filed on June 20, 2000) proposes to divert up to 2,000 cubic feet per second (cfs) of water, not to exceed a withdrawal of 72,400 acre feet per year (af/y), from the White River for the WSP, using the existing diversion for the White River hydroelectric project. The application commits that the total combined diversion of water from the White River for the project and the WSP would not exceed 2,000 cfs under any circumstances, which is the current level of diversion under the hydropower project.

2. R2-29935 (filed September 15, 2000) seeks a reservoir permit to store in Lake Tapps up to 2,000 cfs of water, not to exceed a withdrawal of 72,400 af/y that would be diverted from the river pursuant to application S2-29920.

3. S2-29934 (filed September 15, 2000) seeks a secondary permit to divert a daily peak rate of 150 cfs and a daily average per year of 100 cfs, not to exceed a withdrawal of 72,400 af/y, for consumptive use as a municipal, commercial, and industrial water supply. Under the proposal, water would be diverted for water supply from the forebay of the hydropower project. Water would then be treated and transmitted into a regional distribution system.

The water would be used to provide a regional public, municipal, industrial, and commercial water supply to be used within Pierce, King, and Snohomish Counties. The applicant states that the combined diversion of the new appropriation and the existing hydropower project would not exceed the current level of diversion for the hydropower project of 2,000 cfs. Thus, diversions from the White River for the hydropower project would be reduced by an amount equal to diversions made for the WSP.

This Report of Examination (ROE) evaluates the above three applications collectively since they are integrally related as a single project. To approve these applications, Ecology must issue written findings of fact and determine that each of the following four requirements of RCW 90.03.290 has been satisfied:

(1) Water is available for appropriation;

(2) The proposed appropriation would be put to a beneficial use;

(3) The proposed appropriation would not impair existing water rights; and

(4) The proposed appropriation would not be detrimental to the public interest.

This ROE addresses these subjects in the following order. First, it describes in detail the proposed project and the applications filed. Second, it presents Ecology's investigations. Third, it separately evaluates each of the requirements of the four-part test. Following that is the decision of Ecology.

ARTICLE III.

ARTICLE IV. 2.0 DESCRIPTION OF THE PROPOSED WSP

Section 4.01 2.1 PSE's Existing Water Right

PSE owns and operates the White River Hydroelectric Project, located on the south side of the White River in Pierce County, Washington, between river miles (RM) 24.3 and 3.6. PSE's water right for the hydropower project is based upon claims of pre-code water dating back to 1895. Under the claims, PSE diverts up to 2,000 cfs from the White River for hydropower production. A 1986 settlement agreement between the Muckleshoot Indian Tribe and PSE requires by-pass flows of 130 cfs at the Muckleshoot reservation boundary and a 3,650 second-foot-day (sfd) water budget for fish transportation. Prior to 1986, the required flow in the Bypass Reach was 30 cfs.

Section 4.02 2.2 Detailed Description of Proposal

(a) 2.2.1 Location of Project in White River/Puyallup River Basin

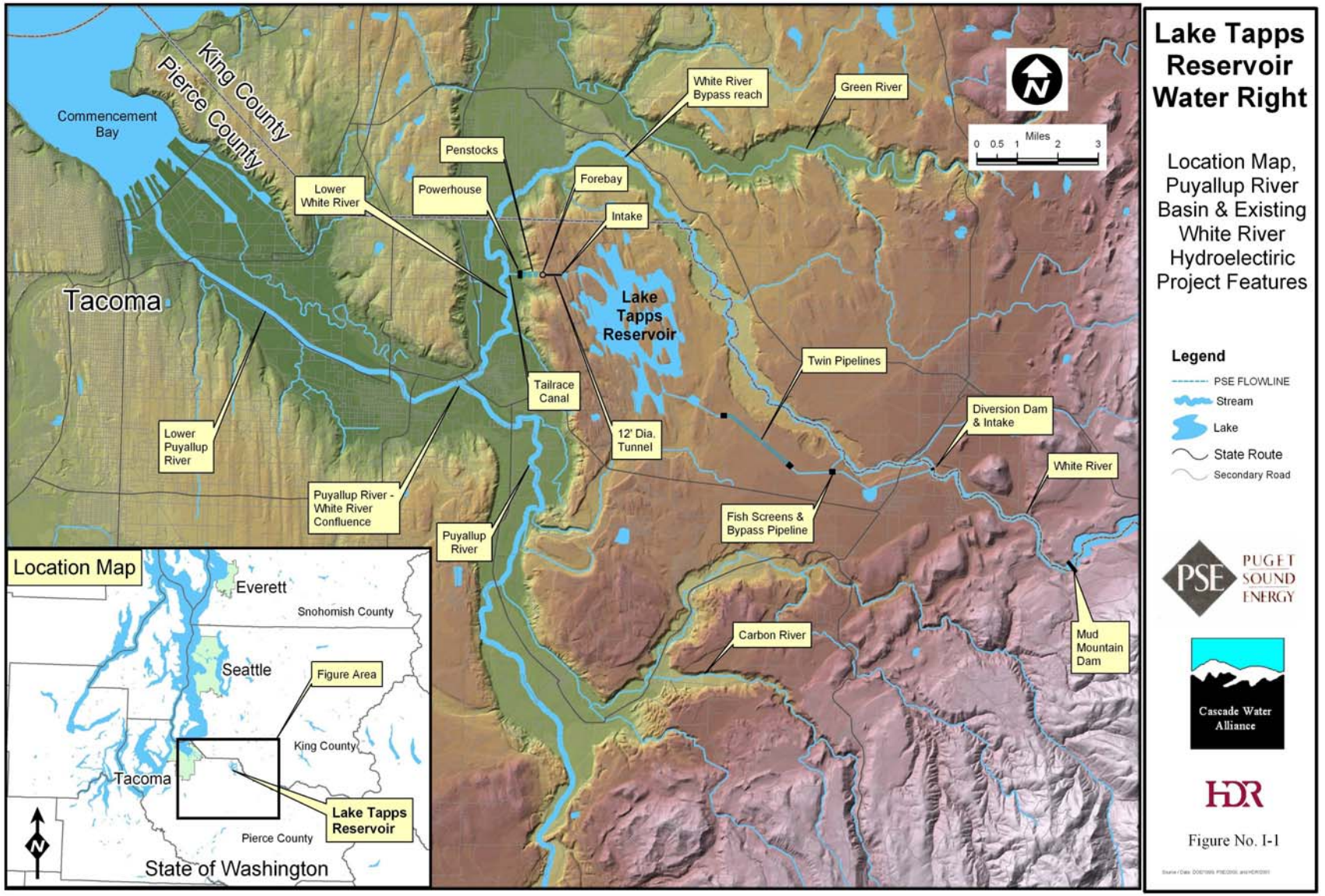
The project site is located within the Puyallup-White River Watershed, Water Resource Inventory Area (WRIA) 10. The proposed WSP would be located with and use many of the existing structures of PSE's White River Hydroelectric Project. The project area, structures, and topography are shown in Figure 1-1 of HDR 2002a Technical Memorandum (TM) 1 (included below). A simplified schematic of the relationship between the WSP, Lake Tapps, and the White and Puyallup Rivers is shown on Figure 1-2 of TM 1 (included below).

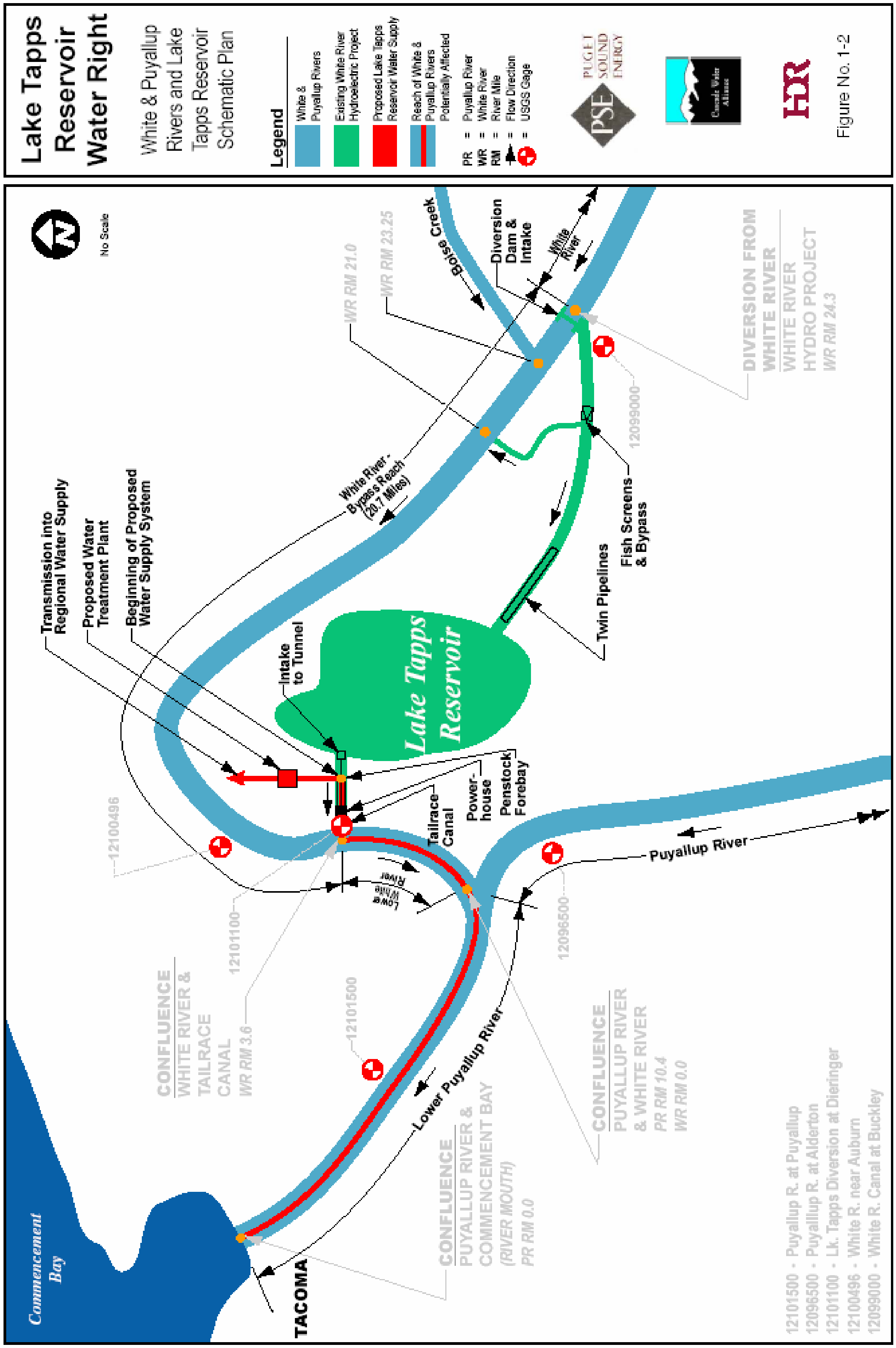
The existing White River Hydroelectric Project diverts water from the White River at RM 24.3 near the town of Buckley. Diverted water travels through the existing 8-mile-long diversion flowline consisting of flumes, canals, fish screens, five settling basins, and pipelines. Diverted water is then stored in Lake Tapps Reservoir; a man-made reservoir consisting of dikes impounding water in natural topography that once held four small lakes. Lake Tapps has a surface area of 2,700 acres and active storage capacity of 46,700 acre-feet. Water surface elevations can range from a normal maximum of 543 feet mean sea level (ft msl) to a minimum of 515 ft msl, which corresponds with the bottom of the outlet works.

The main outlet from Lake Tapps is the 12-foot-diameter concrete tunnel leading to the forebay, penstocks, and ultimately the powerhouse and turbines of the White River Hydroelectric Project. After water is released from the turbines it flows through a 0.5-mile-long tailrace canal into the White River. The reach of the White River between the diversion dam at RM 24.3 and the tailrace at RM 3.6 is referred to as the Bypass Reach.

Downstream of the confluence of the tailrace and White River, the White River continues for 3.6 miles before joining the Puyallup River. This reach of the White River is referred to in this ROE as the lower White River. Below the confluence with the White River, the Puyallup River continues for 10.4 miles before entering Commencement Bay in Tacoma.

Flow monitoring gages exist at several locations in the watershed. The most significant gages for evaluation of the WSP are the Puyallup River at Puyallup (RM 5.6) where a minimum instream flow applies, and the White River near Buckley and at Buckley gages located above and below the White River diversion dam.


Lake Tapps Reservoir Water Right
Location Map, Puyallup River Basin & Existing White River Hydroelectiric Project Features
Legend
PSE FLOWLINE
Stream
Lake
State Route
Secondary Road
Commencement Bay
King County
Pierce County
Tacoma
Lower White River
Penstocks
Powerhouse
Forebay
Intake
White River Bypass reach
Green River
Lake Tapps Reservoir
Twin Pipelines
Tailrace Canal
12' Dia. Tunnel
Diversion Dam & Intake
White River
Lower Puyallup River
Puyallup River - White River Confluence
Puyallup River
Fish Screens & Bypass Pipeline
Carbon River
Mud Mountain Dam
Miles
0 0.5 1 2 3
Location Map
Everett
Snohomish County
Seattle
Figure Area
King County
Tacoma
Lake Tapps Reservoir
Pierce County
State of Washington
PSE
PUGET SOUND ENERGY
Cascade Water Alliance
HDR
Figure No. I-1


Lake Tapps Reservoir Water Right
White & Puyallup Rivers and Lake Tapps Reservoir Schematic Plan
Legend
White & Puyallup Rivers
Existing White River Hydroelectric Project
Proposed Lake Tapps Reservoir Water Supply
Reach of White & Puyallup Rivers Potentially Affected
PR = Puyallup River
WR = White River
RM = River Mile
= Flow Direction
= USGS Gage
PSE PUGET SOUND ENERGY
Cascade Water Alliance
HR
Figure No. 1-2
No Scale
Commencement Bay
TACOMA
Lake Tapps Reservoir
Transmission into Regional Water Supply
Proposed Water Treatment Plant
Beginning of Proposed Water Supply System
Intake to Tunnel
White River - Bypass Reach (20.7 Miles)
Boise Creek
Diversion Dam & Intake
White River
Twin Pipelines
Fish Screens & Bypass
Tailrace Canal
Power-house
Penstock
Forebay
Lower White River
Puyallup River
Lower Puyallup River
WR RM 21.0
WR RM 23.25
12099000
12100496
12101100
12101500
12096500
DIVERSION FROM WHITE RIVER
WHITE RIVER HYDRO PROJECT
WR RM 24.3
CONFLUENCE WHITE RIVER & TAILRACE CANAL
WR RM 3.6
CONFLUENCE PUYALLUP RIVER & WHITE RIVER
PR RM 10.4
WR RM 0.0
CONFLUENCE PUYALLUP RIVER & COMMENCEMENT BAY
(RIVER MOUTH)
PR RM 0.0
12101500 - Puyallup R. at Puyallup
12096500 - Puyallup R. at Alderton
12101100 - Lk. Tapps Diversion at Dieringer
12100496 - White R. near Auburn
12099000 - White R. Canal at Buckley

240 **(b)**

7

(c) 2.2.2 Potential Minimum Instream Flows for the White River Bypass Reach

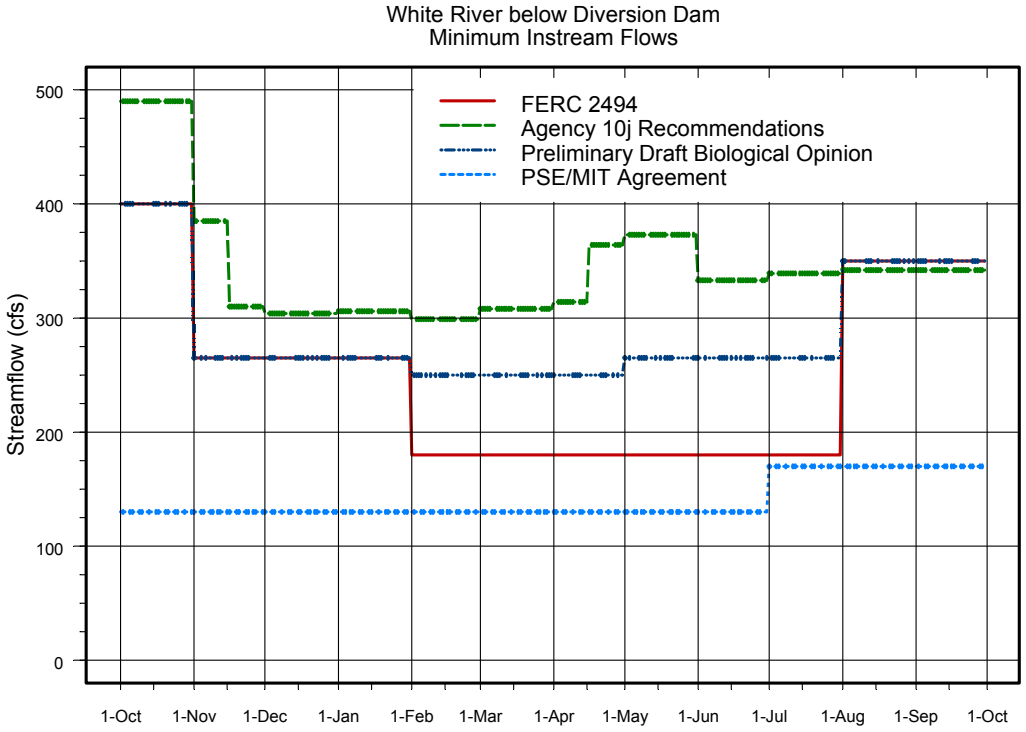
Within the past few years, three sets of potential future minimum instream flows (MIFs) have been suggested for the White River below the diversion dam: Agency 10j, Federal Energy Regulatory Commission (FERC) 2494, and the Preliminary Draft NMFS Biological Opinion (Preliminary Draft NMFS BiOp). The MIFs vary throughout the year with lower flows required in winter and spring, and higher flows in fall. The variation throughout the year is shown in Table 1 and on TM 16 Figure 4-3 (both included below). The MIF for the White River below the diversion dam will be determined through the ongoing FERC relicensing process.

As a component of a proposed Flow Augmentation Plan (FAP) and Reservoir Management Plan (RMP), the applicant has proposed to operate its diversion to provide a flow of 250 cfs in the Bypass Reach from February through April. This flow is equal to the Preliminary Draft NMFS BiOp MIF for this period.

a. **Table 1. Minimum Instream Flow Scenarios for Modeling Analysis White River Instream Flows below the Diversion Dam (from TM 16 Table 4-1)**

(d) Month	PSE/MIT Agreement	FERC Order 2494	NMFS & Agency Recommendations to FERC	LTTF Settlement	Preliminary Draft NMFS Biological Opinion (BO)
January	**130**	**265**	**306**	**Pending**	**265**
February	**130**	**180**	**299**	**Pending**	**250**
March	**130**	**180**	**308**	**Pending**	**250**
April	**130**	**180**	**314/364***	**Pending**	**250**
May	**130**	**180**	**373**	**Pending**	**265**
June	**130**	**180**	**333**	**Pending**	**265**
July	**170**	**180**	**339**	**Pending**	**265**
August	**170**	**350**	**342**	**Pending**	**350**
September	**170**	**350**	**342**	**Pending**	**350**
October	**130**	**400**	**490**	**Pending**	**400**
November	**130**	**265**	**385/310***	**Pending**	**265**
December	**130**	**265**	**304**	**Pending**	**265**

** - Split flows indicate first/second half of month*



TM 16 Figure 4-3. Potential Minimum Instream Flow Requirements Included in the Lake Tapps System Model.

(e) 2.2.3 Reservoir Management Plan

The Reservoir Management Plan, first described in TM 16, establishes the priorities that guide reservoir operations. With the WSP, withdrawals from Lake Tapps for municipal water supply and the integral Flow Augmentation Plan (FAP) are the first priority. Maintenance of lake levels for recreational interests is the second priority and hydropower generation is the third and lowest priority.

To comply with the Puyallup River MIF, the applicant has included a plan to increase hydropower releases under certain circumstances. During periods when the Puyallup River is below the MIF by more than the maximum volume of water released from the Flow Augmentation Plan, PSE would reprioritize hydropower releases above maintenance of lake levels for recreational interests. This ensures that hydropower releases would not be reduced during periods of MIF violation as a result of the WSP. The applicants proposed the following language to implement this component of the plan:

"If Avoidance Water is triggered under the FAP *and* the maximum amount of Avoidance Water is applied *and* instream flows at the Puyallup River at Puyallup gage are still below MIF, the following adjustments to the RMP apply:

1. During the summer recreation season, if the reservoir water surface elevation is below target levels established by the Lake Tapps Task Force (LTTF), PSE will not increase reservoir storage.

2. During the winter period when reservoir levels are drawn down, PSE will not increase reservoir storage.

3. During the spring refill period, PSE will not increase reservoir storage at a rate greater than that necessary to meet target summer recreational levels established by the LTTF."

These conditions result in hydropower releases similar to those that would occur under the Baseline Condition by preventing the reservoir from increases in storage (filling) beyond what would have otherwise occurred.

The third adjustment to the reservoir management plan described in PSE's Memorandum dated June 24, 2003) commits that in certain periods of MIF excursion "[d]uring the spring refill period, PSE will not increase reservoir storage at a rate greater than that necessary to meet target summer recreational levels established by the LTTF." Ecology clarifies that the rate "necessary to meet target summer recreational levels" when applying the reservoir management plan is defined as the average rate necessary to refill the reservoir from the elevation at the end of the winter low pool period up to the target summer recreational level at the start of the summer recreational period or earlier, provided PSE notifies Ecology of the target date prior to the start of refill. The rate will be determined for each year based on when the winter low pool period ended (defined as the earliest date in winter/spring that consistent increases in reservoir storage began) and the target full pool date.

(f) 2.2.4 Flow Augmentation Plan

The applicant has proposed a Flow Augmentation Plan (FAP) as an integral part of the WSP project. TM 17 dated March 12, 2003, describes the FAP. The applicant since amended the FAP to remove Enhancement water in a memorandum dated June 12, 2003 (included with cover letter Attachment 1) and added additional information about the relationship between the FAP and the Reservoir Management Plan in a memorandum dated June 24, 2003 (Attachment 2). As proposed, the FAP has two main elements:

1. PSE will operate the White River diversion to ensure flows of 250 cfs in the bypass reach from February through April.

2. PSE will release avoidance water on an hourly basis to mitigate potential impacts related to water supply when the Puyallup River streamflow is below the MIF.

Under the first element, the applicant proposes to operate the diversion dam to ensure flows of 250 cfs in the Bypass Reach during February through April. The higher White River bypass reach flows in February through April are targeted at improving pH problems in the bypass reach associated with periphyton growth. Higher bypass reach flows would help to reduce nutrient concentrations in the bypass reach, primarily through dilution.

Under the second element, avoidance water would be released on an hourly basis at the rate of water supply withdrawal from the reservoir (typically 100 cfs), or the amount necessary to meet the MIF, whichever is less. For example, if the projected MIF shortfall was 75 cfs and the water supply withdrawal was 100 cfs, then 75 cfs would be released as avoidance water. These releases would occur during non-generating hours and would partially fill in the “troughs” as indicated by the hourly basis lines in the figures in the HDR memo dated 6/12/03 (Attachment 1). The release

rate for avoidance water would be calculated on an hourly basis using a predictive tool to be developed by PSE.

Accurate release of avoidance water is dependent on predicting Puyallup River at Puyallup flows several hours ahead. PSE has proposed developing a predictive tool that would 1) be designed to forecast flows at Puyallup ahead with enough time to allow water released at the tailrace to get to the Puyallup gage prior to the predicted MIF excursion, and 2) have a false negative (failure to predict a MIF excursion) error rate of less than 10 percent.

To implement the FAP, PSE would provide a mechanism for releasing flow from the tailrace at a lower rate than the 250 to 300 cfs minimum imposed by physical limitations of the current turbines. The actual mechanism would be determined by PSE, but it is expected that either a smaller turbine or valved pipeline would be added to the hydropower facility to allow release of augmentation water at lower flow rates than currently possible with the existing turbines.

The enhancement water budget of 11,100 acre-feet, a third component of the FAP as described in TM 17, has since been removed from the proposal in substitute for maintaining a flow of at least 250 cfs in the Bypass Reach for February through April. This measure is targeted at improving aquatic habitat in the Bypass Reach and reducing problems with high pH that currently occur as a result of nutrient levels and low flows.

(g) 2.2.5 Water Supply Project Features

Water for the WSP would be diverted from the White River using the existing diversion dam and stored in Lake Tapps Reservoir. From the forebay of the hydropower facility, water would be withdrawn from Lake Tapps, treated, and conveyed to a regional water distribution system.

The following new facilities would be constructed as part of the WSP: raw water intake pipe, water treatment plant, and a transmission pipeline with booster pumps as needed. No changes are proposed to the diversion dam, diversion canal, or Lake Tapps Reservoir as a result of the WSP. TMs 2 and 5 describe the project features and treatment system in greater detail (HDR 2002a).

A Water Treatment Plant Feasibility Study (TM 5) was conducted as part of the Lake Tapps Reservoir Water Right Feasibility Report. The Treatment Plant Feasibility Study concluded that there was a suitable site for construction of a treatment plant from a space perspective and that the site had no known environmental or permitting issues that would preclude development. The study provided a preliminary selection of treatment unit processes that would be needed to meet Washington Department of Health (WDOH) standards and included an inlet control structure, screens, flocculation tanks, membrane filtration, granular activated carbon beds, washwater recovery, and solids recovery. Because the initial phase of the supply development is not scheduled to be needed until 2024, modification of the selected preliminary treatment processes is anticipated in response to future technological advances. Whatever the final treatment configuration is, it would be subject to review and approval by WDOH.

(h) 2.2.6 Place of Use

The Place of Use (POU) includes all King County UGAs and Utility Service Areas identified in the Central Puget Sound Regional Water Supply Outlook (Outlook), the Pierce County UGAs and Utility Service Areas in the Outlook except the Cities of Dupont, Eatonville, Roy, the Fort Lewis and McChord military bases, and the McKenna, Southwood, Graham Hill, Eldorado, and

Chinook water systems. The POU also includes the Olympic View Water District in Snohomish County that is partially supplied by the Seattle Public Utilities (SPU), and the Gig Harbor peninsula.

The POU for the Lake Tapps Water Right establishes the geographical area in which area purveyors may incorporate water from Lake Tapps as a part of their supply source, for source exchange, as an operational supply (supplemental to other supplies) to accommodate conjunctive use of surface water and groundwater supplies, or to support system reliability during emergency and/or drought events.

1)

The POU is shown in TM 8 on the Proposed Place of Use Exhibit (included below), which references township, range, and section boundaries for legal description purposes.

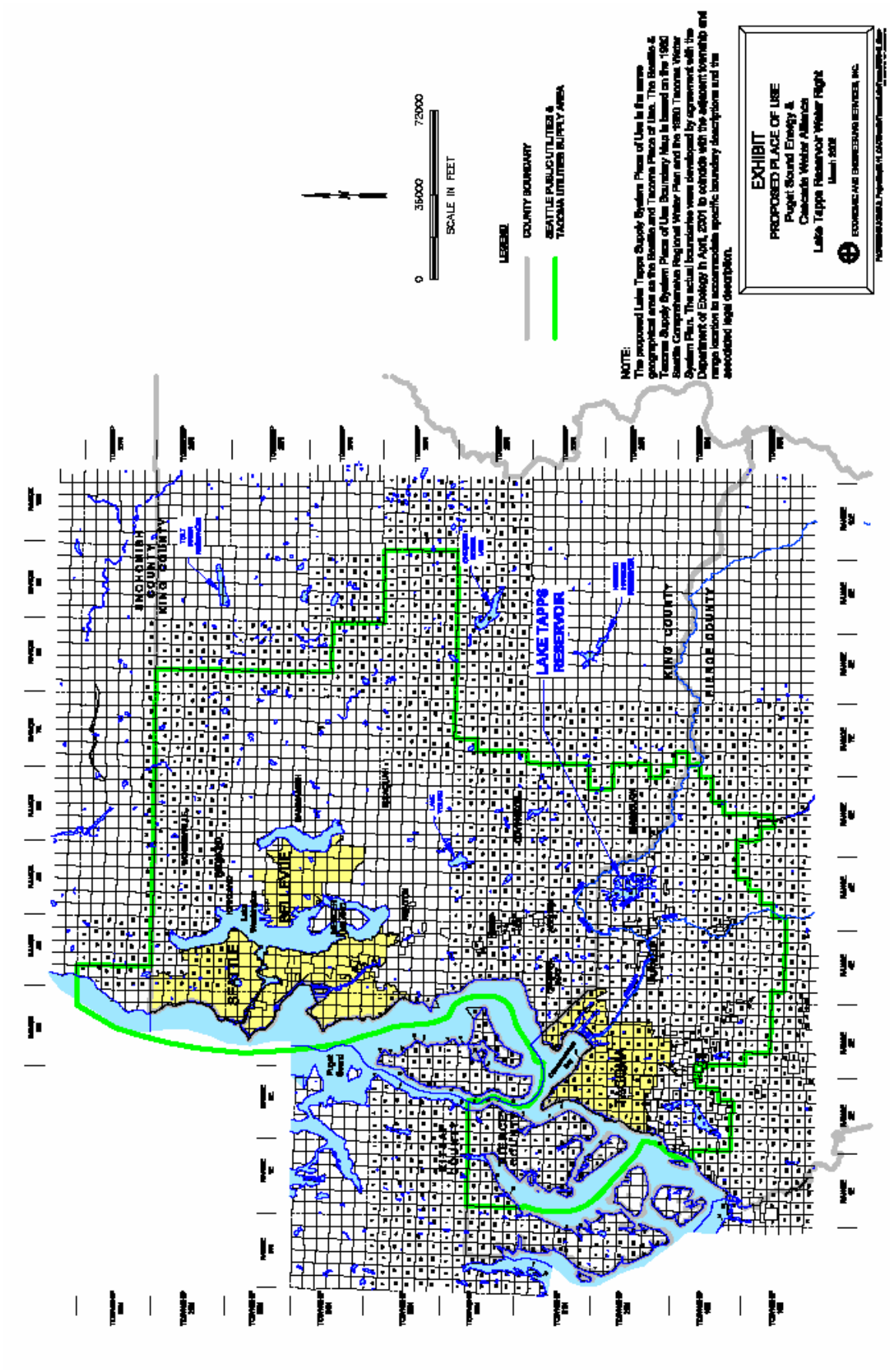


EXHIBIT
PROPOSED PLACE OF USE
Puget Sound Energy &
Cascade Water Alliance
Lake Tapps Reservoir Water Right
LEGEND
COUNTY BOUNDARY
SEATTLE PUBLIC UTILITIES &
TACOMA UTILITIES SUPPLY AREA
SCALE IN FEET
NOTE:
LAKE TAPPS
RESERVOIR
SNOHOMISH COUNTY
KING COUNTY
PIERCE COUNTY
SEATTLE
BELLEVUE
TACOMA

399 **2)**

(i) 2.2.7 Source Exchange Program

1)

The applicant has agreed to develop and construct the WSP in accordance with the Development Schedule, to provide up to 16 million gallons per day (mgd) peak supply (QI) and a total annual volume (QA) of 11,000 acre-feet solely for a Source Exchange Program (the Program). The objective of the Program would be to maximize the overall biological benefit to endangered or impaired fisheries from use of Program Water. Program Water would be used only to replace supplies for public water systems whose normal supply adversely impacts the Priority Surface Waters and will not be available to serve growth or to increase a utilities normal water supply. The applicant has proposed the following:

1. Priority Surface Waters and Source Exchange Program

a) No later than 5 years prior to the commencement of use of water under the permit, the permit holder shall contribute $150,000 (2003 dollars) to Ecology to conduct a study for purpose of identifying and ranking by order of biological need Priority Surface Waters within the POU of the permit that require instream flows/levels to be increased to achieve healthy harvestable fish runs. The scope of the study shall be jointly developed by Ecology and the permit holder; however, Ecology may make final determinations as to the scope of the study in the event of a disagreement. Such study shall identify the likely periods of time, levels of flow, and other conditions that would be beneficial. Such study shall be done in consultation with the permit holder and utilize to the extent appropriate any assistance or information that may be available from WDFW and the Central Puget Sound Regional Water Resource Management Program. To the extent that funds are left over, Ecology shall apply the money to its evaluation of the Program developed under subsection b below or modifications of it or modifications of the Program developed pursuant to subsection b or section 4 below.

b) Within one year of receipt of Ecology's designation of Priority Surface Waters within the POU of the permit, the permit holder shall prepare and submit to Ecology a Program for review and acceptance or modification consistent with the terms of these provisions. Prior to any modification Ecology shall consult with the permit holder. If Ecology does not accept the Program, or requests modifications to the Program that are unacceptable to the permit holder, the parties will act in good faith to resolve their differences. If the permit holder and Ecology are not able to resolve disagreements about the Program within 30 days of Ecology's decision to not accept a condition of the Program, either party may request the matter be submitted to a mutually selected third party arbitrator whose decision shall be binding. If the parties are unable to agree on the selection of the arbitrator within 30 days of the request for arbitration, each party shall within 30 days select an arbitrator with technical expertise in the areas in dispute. The two arbitrators shall jointly select a third person to serve on a three party arbitration panel. If the two arbitrators are unable to agree upon the third arbitrator within 30 days, either party may request the Governor's Office to select the third party arbitrator.

c) The Program shall include identification of utilities that are expected to receive water under the permit that withdraw water from an aquifer that is in significant hydraulic continuity with a Priority Surface Water or diverts from a surface water

that influences flow in a Priority Surface Water. Wells and surface water diversions of the identified utilities shall be grouped by the extent to which modified use or non-use of such wells or diversions would likely produce biological benefits during times that flows are insufficient and, based on the results of the Ecology study, identify flow levels, periods of time, or other conditions which would indicate that source exchange could provide biological benefits relative to normal operation of those wells or diversions. Lack of infrastructure and the costs and timing of building any needed infrastructure may be factored into the grouping.

In the event the permit holder implements a source exchange project with a utility expected to receive water under the permit prior to water being put to use under the permit, continuation of that project shall be considered use of Program Water. The Program may also contain provision for utilities within the place of use identified in the permit to participate in the Program through a Source Exchange Contract with the permit holder.

2. Volume Commitment and Schedule

a) Program Water will be available during the first full year water is put to use under the permit or the first full year following Ecology's acceptance of the Program, whichever is later, and will be used as follows:

i. In Phase I, up to 8-mgd peak supply (QI) or a total annual volume (QA) of 4500 acre-feet shall be made available for source exchange. Within this QA limit, during Phase I the permit holder shall achieve a minimum level of actual source exchange at the lesser of 4 mgd peak supply for utilities within the place of use identified in the permit or the level of need identified in the Program for peak supply of utilities that are expected to receive water under the permit in that calendar year. Source exchange water shall be provided based upon the priority of wells and surface water sources set forth in the Source Exchange Program in order to maximize biological benefits.

ii. Following the completion of construction of Phase II, up to 16 mgd peak supply (QI) or a total annual volume (QA) of 11,000 acre-feet shall be available for source exchange. Within this QA limit, upon the commencement of Phase II, the permit holder shall thereafter achieve a minimum level of actual source exchange at the lesser of 8 mgd peak supply for utilities within the place of use identified in the permit or the level of need identified in the Program for peak supply of utilities that are expected to receive water under the permit in that calendar year. Source exchange water shall be provided based upon the priority of wells and surface water sources set forth in the Source Exchange Program to maximize biological benefits.

iii. If the minimum peak supply source exchange levels required in paragraphs i. and ii above are not met for the preceding calendar year, the permit holder may not in the subsequent year further increase the instantaneous (QI) or annual use (QA) of water for public water supply (excluding source exchange) beyond the highest levels of instantaneous or annual use for public water supply achieved under the permit in a year in which the minimum source exchange levels were met. This provision does not limit any authority Ecology may have to authorize use of additional water for public water supply or to issue penalties or seek injunctive or

any other available relief to enforce these provisions or other provisions of the permit.

b) Program Water (11,000 acre-feet annually) will be "reserved" for the Program.

c) During the superseding permit process as described in the Development Schedule, Ecology may review and adjust the quantities committed to the Program, although the maximum quantities available and minimum levels of use stated above in paragraph 2.a shall not be increased.

3. Reporting

2)

3) By January 31 following the first year in which Program Water is utilized (and annually thereafter), the permit holder shall provide a report to Ecology that includes:

- Program status, including compliance with commitments in prior calendar year, participants, wells/surface waters affected, quantities and periods of well and surface water use avoided, etc.;

a)

- Evaluation of Program success in providing maximum biological benefits; and

b)

- Recommendations for modifications to the Program.

4. Modification of the Program

In addition to the annual report, the permit holder may at any time submit to Ecology written recommendations for modification of the Program. Ecology shall review any recommended modifications to the Program and accept, deny, or modify upon consultation such recommendations within 90 days of receipt thereof. Ecology may initiate any modifications to the program after written notice to and consultation with the permit holder, if Ecology determines that such modifications are necessary to fully implement the above provisions. If Ecology denies, or amends the recommended modifications in a manner that is unacceptable to the permit holder, the parties will act in good faith to resolve their differences. If necessary the parties will submit their differences to a third party agreed upon by the parties to issue a binding decision as provided in 1(b) above.

ARTICLE V. 3.0 INVESTIGATIONS

Section 5.01 3.1 Overview

Evaluation of this application included but was not limited to research, review, and consultations relating to: the three water right applications and associated files for the proposed Lake Tapps Water Supply Project, the protestants' concerns; pertinent state water codes; existing water rights in the vicinity; meetings with the PSE's technical team, including legal counsel, hydrologists, fishery biologists, and water quality scientists; comments from other resource agencies, including the Washington Department of Fish and Wildlife (WDFW) and the Washington State Department of Health (DOH); technical memoranda submitted in response to a Preliminary Permit associated

with this application; the SEPA Environmental Checklist (CWA 2003); site visits on October 3, 2001 and December 5, 2001; and discussions/meetings with agency water quality/watershed assessment staff. Hart Crowser, Inc., had primary responsibility for the investigation with significant support from Ecology staff and from subconsultants Gray and Osborne, Inc. and Aspect Consulting, LLC.

In response to requirements of a Preliminary Permit issued to PSE on March 20, 2001, by Ecology, the applicant submitted a series of Technical Memoranda (TMs) related to various aspects of the WSP project. In subsequent portions of this document, the final versions of these TMs are referred to by TM number (e.g., TM 16) throughout remainder of the text. The full reference for all TMs is: HDR 2002a. Lake Tapps Water Right Feasibility, Technical Memoranda Volumes I and II. March 19, 2002. TMs 16, 25, and 26 are dated April 30, 2002. TM 17 is dated March 12, 2003.

The WSP has been reviewed independently of the FERC relicensing in progress for the existing hydropower project. The investigations conducted in preparation of this ROE focus on changes to the White and Puyallup River watersheds caused by implementation of the WSP only, since the existing non-consumptive diversion of 2,000 cfs is an established water right claim. This established right forms the Baseline for comparison with introduction of the WSP.

Section 5.02 3.2 Cost Reimbursement Program

This application has been processed under Ecology Cost-Reimbursement Project No. 9E52, under agreement between Ecology and PSE. Hart Crowser, Inc. is under contract to Ecology to process pending water right applications in the Puyallup-White River Watershed (WRIA 10) senior to and including PSE's applications for the Lake Tapps Water Supply Project. PSE initiated participation in a cost recovery agreement with Ecology through a letter dated October 4, 2000, from Tom McDonald of Perkins Coie LLP.

Section 5.03 3.3 Notice

The applicant published Public Notices for this project in the Tacoma News Tribune on October 5 and 12, 2000.

Section 5.04 3.4 Protests and Comments

Four formal protests were submitted to Ecology regarding PSE's three applications associated with the WSP, including S2-29934. The protestant's concerns are briefly summarized below and are addressed in later sections of this ROE.

(a) 3.4.1 Auburn Protest

A protest was submitted from the City of Auburn on November 2, 2000, focusing on concerns regarding the accelerated timing of senior application review under the Cost-Reimbursement Program, including Auburn's pending water rights applications for Wells 6 and 7. In particular, Auburn was concerned about having sufficient time to complete studies relative to the water right applications. These applications were formally withdrawn by Auburn on August 6, 2002.

(b) 3.4.2 Puyallup Protest

A protest was received from the Puyallup Tribe of Indians (PTI) on November 8, 2000, requesting that Ecology not proceed with permitting until it has cooperated with the tribal water

resource managers in addressing environmental and regulatory issues. The PTI expressed concern about the following:

- Harm to fisheries caused by committing water to consumptive uses;
- Likely increases in thermal and contaminant loading in the Puyallup River system;
- Impairment of existing water rights, including tribal rights;
- Need for programmatic and site-specific environmental impact statements;
- Need for appropriate instream flows relative to fisheries requirements; and
- Concern that the applications are not clear about whether additional water would be diverted beyond PSE's existing water right claims.

The PTI submitted additional comments on February 15, 2002, and September 23, 2002, regarding Technical Memoranda prepared by HDR in response to the project's Preliminary Permit. Those comments primarily focused on the following additional areas:

- TMs disregard Tribal jurisdiction over water flows, levels, and quality in the reservation reach of the Puyallup River;
- WSP would impact the Puyallup River TMDL and waste load allocation;
- Public water quality analysis does not meet WAC 246-290-130 requirements;
- Lack of demonstrated need for the water supply;
- Baseline for measuring impacts of the WSP should not include the existing hydropower facility;
- Enhancement water from Lake Tapps is of poor quality and the 11,100 ac ft budget is insufficient. Instead, enhancement water should be released from the diversion dam rather than the tailrace.
- Puyallup River MIFs should be evaluated instantaneously not on a daily average;
- Flow model over-predicts water quantities and thus is not reliable;
- Water quality impacts violate Tribal and State antidegradation policies; and
- Reductions in flow caused by the WSP would impact fish production and access to off-channel habitats.

(c) 3.4.3 Muckleshoot Protest

Ecology received a protest from the Muckleshoot Indian Tribe (MIT) on November 9, 2000, based on withdrawal of water from consumptive use and the adverse effects on flow regimes, water quality, and aquatic and riparian ecosystems function of the White and Puyallup Rivers. The MIT identified two primary concerns:

- Lack of a demonstrated need for a regional water supply from the White River; and
- PSE's failure to demonstrate environmental benefits.

The MIT submitted lengthy additional comments on August 14, 2002, regarding the Technical Memoranda prepared by HDR in response to the project's Preliminary Permit. Those comments primarily focused on the following additional areas:

- WSP is purely a speculative economic interest;
- Lack of detail on the proposed distribution system;
- Lake Tapps water is not the "Highest Quality Source" available to meet future demands;

- Proposed source exchange mitigation is unproven and speculative at best;
- TMs use an inappropriate Baseline from which to measure impacts of the project;
- Flow model contains flaws that make it unreliable for assessing impacts; and affect the water quality analyses; and
- Out-of-basin transfer of municipal water supply by private entities raises substantial public policy issues.

(d) 3.4.4 Response to Tribal Comments

The technical and policy comments from the Puyallup and Muckleshoot Tribes have been considered carefully during review of this water right application. Many of the Tribes' technical comments are addressed in the Investigations section of this ROE, particularly in the model limitations discussions for the water quantity and quality models. Concerns over impairment of treaty water rights are addressed in the Impairment Discussion in Section 4.3. Several of the Tribes' major concerns have been addressed by subsequent changes to the applicant's proposal and/or analyses (e.g., the applicant has clarified that no additional water beyond that allowed by the existing claims would be diverted from the White River, has modeled the 7Q10 flows, and has revised the Flow Augmentation Plan to address hourly MIF excursions). Further, in response to an Ecology request for additional information, the applicant prepared a draft memorandum with additional technical analysis aimed at responding to several tribal comments (HDR 2003a). The following points briefly describe Ecology's conclusions regarding several of the Tribes' major concerns:

Suitability of Lake Tapps as a Drinking Water Source. Ecology has sufficient information to conclude that it is feasible to treat Lake Tapps water to provide a high quality drinking water source. Department of Health would conduct additional reviews of the Water System Plan and other components of the proposed water supply before a water supply withdrawal from Lake Tapps would begin.

Lack of Demonstrated Demand for a New Regional Water Supply. The intent of this water supply project is to provide a significant source of public water supply for meeting the future needs of Central Puget Sound. Due to its scale and central location, this project would provide a unique potential source to meet other public water supply needs within the Central Puget Sound region and thereby increase reliability of meeting future demands. As discussed in this ROE, the Cascade Water Alliance (CWA) predicts that without a significant new source of water such as the Lake Tapps supply, CWA members would have an average unmet demand of 27.5 mgd by 2034 and of 54.9 mgd by 2054, increasing to 61.1 mgd in 2055. If future regional water planning efforts determine that the demand for this water has been overestimated, the terms of this permit provide that in 2036 Ecology will reassess the level of need projected for 2054, and adjust the amount of the permit accordingly in a superseding permit.

Definition of Baseline from Which to Measure Impacts. The Baseline Condition used in the applicants' analyses and this ROE is fair because it represents the most likely future operations of Lake Tapps; is independent of the WSP; and Ecology can condition the WSP to require that certain elements of the Baseline Condition would be met.

Water Quantity Model. No model perfectly represents the real world. The water quantity model is adequate for evaluating the proposed project. The model limitations section of this ROE addresses this issue.

Water Quality Impacts. Overall, the WSP would result in a marginal improvement in water quality and would not cause any periods of violation of State or Tribal numeric water quality standards. During certain, less frequent, periods the WSP would cause a marginal decrease in water quality from Baseline Conditions. These periods of marginal decrease in water quality would be overridden by the other benefits of the WSP.

Adequacy of Proposed Mitigation. The mitigation proposal has changed significantly since the Tribes' comments. Enhancement water has been removed from the proposal, maintenance of higher Bypass Reach flows during February through April has been added, and the source exchange component has been significantly refined to add specific commitments.

Aquatic Habitat Impacts. The WSP provides a benefit to fish by increasing the lowest flows, and maintaining higher late winter/early spring flows in the Bypass Reach. The water that would be withdrawn as a result of the WSP would otherwise be of little value to fish because it would be (and has historically been) released from Lake Tapps in daily, short duration, high flow rate hydropower peaks.

(e) 3.4.5 CELP Protest

A protest was submitted from Center for Environmental Law and Policy (CELP) on November 10, 2000, citing concerns focused on potential "take" under the Endangered Species Act (ESA). The protest letter assumed that an additional 2000 cfs would be withdrawn from the White River under the applications. PSE has clarified that the total combined diversion for hydropower and water supply into Lake Tapps would be limited to a maximum of 2000 cfs as allowed by their current water right claim.

Section 5.05 3.5 State Environmental Policy Act (SEPA)

In 2001, the Cascade Water Alliance (CWA) assumed lead agency status for undertaking a SEPA analysis of the proposed WSP. A SEPA Environmental Checklist was prepared on behalf of PSE, and submitted in draft to CWA on October 10, 2003. The draft was finalized on February 10, 2003. CWA issued a finding of Mitigated Determination of Nonsignificance (MDNS) on February 13, 2003. There was a 30-day comment period ending March 17, 2003.

Ecology submitted comments to CWA in a letter dated March 17, 2003. Ecology's comments generally addressed inconsistencies between the Environmental Checklist and the TMs regarding the water quantity, lake level, water quality, and the supply and demand analyses.

CWA published an addendum to the SEPA MDNS on May 13, 2003, consisting of updated demand forecasts and a response to comments.

Section 5.06 3.6 Current Operations

Lake Tapps Reservoir operates as an offline storage facility for the main purpose of hydropower generation. The average reservoir water surface elevation is shown on Figure 3-2 in TM 16. The reservoir is typically maintained at normal full pool (elevation 543 feet) through the summer and then is drawn down in winter for hydropower generation and to expose lake sediment to prevent macrophyte growth. The normal minimum pool elevation is 515 feet. The hydropower intake withdraws water over an interval from elevation 507 feet to the water surface. At full pool the withdrawal occurs from the top 36 feet of the reservoir.

Lake Tapps does not currently operate according to a fixed rule curve, although the general pattern of maintaining high pool in summer and drawdown in winter has been followed by PSE. Releases are currently driven primarily by hydropower demand. Since diversion into Lake Tapps from the White River can be regulated as necessary, there is no spillway on Lake Tapps. As a result, all water currently released from the lake flows through the turbines and generates hydropower.

The White River Hydroelectric Project is currently operating under a Stay of License from FERC that requires higher flows in the White River Bypass Reach among other conditions. The Stay of License flows are higher than the 130 cfs minimum flow requirement of the 1986 settlement agreement.

Section 5.07 3.7 Projected Demand and Available Supply

Under a Memorandum of Understanding (MOU) with PSE dated August 7, 2001, and amended December 20, 2002, the CWA may purchase and develop the water rights into a regional water supply. If negotiations under the MOU are successful, CWA may be the actual water supply purveyor. The CWA is a coalition of eight municipalities and water districts, including Bellevue, Redmond, and the Covington Water District, organized to provide water supply to meet their current and future needs.

The intent of this WSP is to provide a significant source of public water supply for meeting the future needs of customers and businesses in the Central Puget Sound region. Due to its scale and the central location of the contemplated transmission system, this project would provide a unique potential source to meet other public water supply needs within the Central Puget Sound region and thereby increase reliability of meeting future demands. Providing reliable public water supplies that meet the needs of population and economic growth is an important state policy recognized in RCW 90.54.010 & 020. As discussed below, the supply and demand analysis predicts that without a significant new source of water such as the Lake Tapps supply, CWA members would have an average unmet demand of 27.5 mgd (30,806 af/y) by 2034 and of 54.9 mgd (61,500 af/y) by 2054. The unmet demand increases to approximately 61.1 mgd (68,445 af/y) in 2055 when CWA's anticipated supply contract with Seattle Public Utilities (SPU) expires.

A water right for an average annual amount of 64.6 mgd (72,400 af/y) is reasonable in light of this supply and demand analysis, and consistent with the development schedule and stated intent of providing a source of water for source exchange; this permit will allocate the following annual volumes of water:

- 61,400 af/y for 2054 demand
- 11,000 af/y – source exchange
- 72,400 af/y (total)

The Lake Tapps Water Supply Project is proposed to be developed based on 50-year demand and supply projections for CWA members within the CWA Regional Water System. The development of the public water supply will be based on projections for two phases: the first 30 years, to 2034, and for the remaining 20 years, to 2054. Given that securing adequate water for meeting future population and economic growth is becoming difficult, the planning horizon for locating and permitting new regional public water supply sources and needed infrastructure has considerably lengthened.

(a) 3.7.1 Supply and Demand Analysis

The intent of the water supply project applications is to secure water rights to supply the municipal water needs of the Central Puget Sound region. A report prepared for the applicant by EES, titled *Lake Tapps Beneficial Use Analysis and Development Schedule (*May 2002), describes the project as follows:

> *CWA's plan is to develop the supply potential of Lake Tapps (66 mgd average/100mgd max day) and then to incrementally manage the supply for meeting new demands from CWA members and as an Environmental Supply (Source Exchange, Flow Enhancement, and Flow Management) for all municipal and tributary supply needs that are accessible to the existing and expanding regional piping system in the defined Place of Use.*

The demand projections provided to Ecology by CWA (April 29, 2003) are based on information from Seattle Public Utilities (SPU) and Financial Consulting Solutions Group, Inc. (FCSG), a consultant working for CWA. These demand projections were used in CWA's rate projection models, which were the basis for establishing Cascade's Regional Capital Facilities Charge. As such, CWA has indicated the projections are the most accurate available.

The demand projections are shown in Table 2, and according to CWA are based in part on SPU projections and in part on CWA's own projections. Year 2020 demands for Bellevue, Kirkland, Tukwila, Redmond, and Skyway are from "*SPU Forecasts of Individual Purveyor Water Demands 2000-2020 - 7/29/02: Total Demand Including 1% Program Savings."* Year 2020 demand projections for Covington, Issaquah, and Sammamish Plateau were developed by CWA. CWA has advised that these three jurisdictions have conservation programs equivalent to the regional program generally reflected in the SPU 1% program and that this conservation is reflected in the CWA demand projections.

Expanding on the conservation element of the demand projection, the conservation included in SPU's 1% program is a 10-year program designed to reduce regional per capita water use by 1 percent per year – enough savings to maintain total consumption at or below current levels while accommodating expected growth in the regional population and business.

To extend the forecast demand from 2020 to 2050, CWA has used 1% annual growth in population served. While the population increased, the per capita water consumption was held constant at the 2020 levels for this 30-year period. The resultant 2050 demands are also shown in Table 2.

On the supply side, the supplies noted in Table 3.7.1 are the existing supplies of CWA members and were taken from information provided by CWA and verified by comparison with the Outlook, Table 6-1.

PSE has requested an annual withdrawal of 72,400 af/y (64.6 mgd). By the year 2034, CWA anticipates a demand from Lake Tapps of approximately 27.5 mgd average daily demand, which equates to approximately 30,800 af/y. By the year 2055, CWA anticipates demand from Lake Tapps of 54.9 mgd average daily demand, for a total of 61,500 af/y. This is in addition to 17.3 mgd average daily demand supplied by CWA Member current ground water rights and in addition to anticipated supply currently under negotiations from SPU for 21.2 mgd for 2034 and 6.2 mgd for 2054.

(b) 3.7.2 Alternative Supply Analysis

Lake Tapps is one of the potential regional supply options available to serve the future growth in demand in the central Puget Sound area. A discussion of the conventional supply options (options that increase the amount of water available to meet demand) and other options such as conservation, reuse and storm water are discussed in the 2001 Central Puget Sound Regional Water Supply Outlook. The conventional supply options discussed included new ground and surface water sources, expansion of existing ground and surface water sources, storage which makes more water available when it is needed and interties which allow conjunctive use of supplies.

The Outlook profiled the conventional supply options identified by the Central Puget Sound Water Suppliers Forum. The profile included a project description that identified the lead agency for the supply project and the associated capacity, purpose, and potential service and supply area. The options were characterized by yields, costs, institutional constraints and environmental considerations. Finally, the projects were classified according to status of planning and permitting as a measure of how viable a project may be. The Outlook was careful to point out that the "status" was not intended to indicate the order in which projects will or should be implemented. In other words, the Outlook did not take a position on or compare the merits of any of the alternatives.

In the absence of a regional evaluation comparing the merits of various supply options, the Lake Tapps supply option was evaluated on its own merit. From the perspective of providing a supply to meet the future demand of the Cascade Water Alliance members, we note that the Lake Tapps project is the only supply option in which PSE or CWA is listed as the lead agency. Demonstration of "need" is therefore based on evaluation of CWA's projected demand versus its existing supplies and other contracted supplies.

Table 2 - CWA Supply and Demand Summary in mgd (1)

	2020			2050		
Purveyor	**DEMAND**	**SUPPLY**	**DEFICIT**	**DEMAND**	**SUPPLY**	**DEFICIT**
Bellevue	17.0			22.9		
Bellevue from Coal Creek (3)	1.5			2.0		
Kirkland	4.8			6.5		
Tukwila	2.8			3.8		
Redmond	8.2	2.7		10.1	2.7	
Skyway	1.0	0.5		1.2	0.5	
Covington (2)				7.0	5.4	
Issaquah	6.5	2.5		7.9	2.5	
Sammamish	12.2	6.2		14.3	6.2	
Total	**54.0**	**11.9**	**42.1**	**75.6**	**17.3**	**58.3**

(1) Table 2 is intended to depict CWA's own supply and demand picture. Interim supplies from other utilities (SPU & TU) are shown in Table 5.

(2) Covington is not projected to require supplemental water supply until after 2020 and therefore the supply and demand for Covington are not shown for 2020 in the table, but are included in the 2050 projections. Supplemental supply for Covington from Lake

Tapps water is not projected to occur until 2030. Until that time Covington demand would be served from its existing supplies

(3) Demand reflects Bellevue's assumption of 57% of the Coal Creek Utility District.

CWA's Plan for regional water supply provides for a 50-year declining block supply contract with SPU, a wholesale purchase agreement with Tacoma which would provide up to 15 mgd (average day) and the development of Lake Tapps as a supply source. The supply summary noted in Table 2 does not include any projected contractual supply from Seattle or Tacoma. Negotiations with these utilities are ongoing.

CWA's projected supply requirements by agency through the year 2050 as provided by CWA are shown in Table 3. The total demands shown on the table are the net of demand minus the existing groundwater supplies of the individual members.

CWA's projected 50-year supply and demand requirements for average, peak season, and peak month as provided by CWA are shown in Table 4. The supply requirements shown are net of demand minus existing groundwater supplies. Table 4 shows the impact of the declining block supply from SPU and the supply from Tacoma Utilities. The table shows CWA's need for development of a new source of supply and the trigger years for development in the two phases proposed by CWA.

(c) 3.7.3 Source Exchange

An integral part of the PSE proposal and a significant component of this Supply and Demand Analysis is the Source Exchange Program, in which utilities within the place of utilize this supply rather than other existing sources that cause impacts to streams in other areas. Source exchange may allow a utility to reduce its surface water diversions or groundwater withdrawals during times when instream flow objectives are not being met or unusual times when existing supplies are not adequate to meet demand.

As a component of this permit authorization additional analysis would be conducted to determine which streams and water purveyors would be affected by the program. The permit holder would develop a program to provide up to 16 mgd peak supply and a total annual volume of 11,000 acre-feet solely for source exchange. A more detailed description of the source exchange program is included in Section 2.2.7

926 **Table 4. CWA Total Wholesale Water Demand**

	Bellevue	BMawr-Skyway	Covington WD	Issaquah	Kirkland	Redmond	Sammamish Plateau WSD	Tukwila	**Total:**
2003	15.24	0.42	0.00	0.22	4.26	3.96	0.00	2.29	26.38
2004	15.25	0.42	0.00	0.44	4.26	3.99	0.00	2.30	26.66
2005	15.25	0.42	0.00	0.67	4.27	4.02	0.43	2.32	27.37
2006	15.26	0.42	0.00	0.89	4.27	4.05	0.86	2.33	28.08
2007	15.27	0.42	0.00	1.11	4.28	4.08	1.29	2.34	28.79
2008	15.28	0.42	0.00	1.33	4.28	4.11	1.71	2.36	29.49
2009	15.28	0.42	0.00	1.56	4.29	4.14	2.14	2.37	30.20
2010	15.29	0.42	0.00	1.78	4.29	4.17	2.57	2.39	30.91
2011	15.30	0.42	0.00	2.00	4.30	4.20	3.00	2.40	31.62
2012	15.49	0.43	0.00	2.22	4.36	4.34	3.33	2.44	32.62
2013	15.68	0.44	0.00	2.44	4.41	4.49	3.67	2.49	33.61
2014	15.87	0.44	0.00	2.67	4.47	4.63	4.00	2.53	34.61
2015	16.06	0.45	0.00	2.89	4.52	4.78	4.33	2.58	35.61
2016	16.24	0.46	0.00	3.11	4.58	4.92	4.67	2.62	36.61
2017	16.43	0.47	0.00	3.33	4.63	5.07	5.00	2.67	37.61
2018	16.62	0.48	0.00	3.56	4.69	5.21	5.33	2.71	38.60
2019	16.81	0.49	0.00	3.78	4.74	5.36	5.67	2.76	39.60
2020	17.00	0.50	0.00	4.00	4.80	5.50	6.00	2.80	40.60
2021	17.17	0.51	0.00	4.04	4.85	5.56	6.06	2.83	41.01
2022	17.34	0.51	0.00	4.08	4.90	5.61	6.12	2.86	41.42
2023	17.52	0.52	0.00	4.12	4.95	5.67	6.18	2.88	41.83
2024	17.69	0.52	0.00	4.16	4.99	5.72	6.24	2.91	42.25
2025	17.87	0.53	0.00	4.20	5.04	5.78	6.31	2.94	42.67
2026	18.05	0.53	0.00	4.25	5.10	5.84	6.37	2.97	43.10
2027	18.23	0.54	0.00	4.29	5.15	5.90	6.43	3.00	43.53
2028	18.41	0.54	0.00	4.33	5.20	5.96	6.50	3.03	43.96
2029	18.59	0.55	0.00	4.37	5.25	6.02	6.56	3.06	44.40
2030	18.78	0.55	0.07	4.42	5.30	6.08	6.63	3.09	44.92
2031	18.97	0.56	0.14	4.46	5.36	6.14	6.69	3.12	45.44
2032	19.16	0.56	0.21	4.51	5.41	6.20	6.76	3.16	45.96
2033	19.35	0.57	0.28	4.55	5.46	6.26	6.83	3.19	46.49
2034	19.54	0.57	0.36	4.60	5.52	6.32	6.90	3.22	47.02
2035	19.74	0.58	0.43	4.64	5.57	6.39	6.97	3.25	47.56
2036	19.93	0.59	0.50	4.69	5.63	6.45	7.04	3.28	48.11
2037	20.13	0.59	0.58	4.74	5.68	6.51	7.11	3.32	48.66
2038	20.33	0.60	0.65	4.78	5.74	6.58	7.18	3.35	49.22
2039	20.54	0.60	0.73	4.83	5.80	6.64	7.25	3.38	49.78
2040	20.74	0.61	0.81	4.88	5.86	6.71	7.32	3.42	50.35
2041	20.95	0.62	0.88	4.93	5.92	6.78	7.39	3.45	50.92
2042	21.16	0.62	0.96	4.98	5.97	6.85	7.47	3.49	51.50
2043	21.37	0.63	1.04	5.03	6.03	6.91	7.54	3.52	52.08
2044	21.59	0.63	1.12	5.08	6.09	6.98	7.62	3.56	52.67
2045	21.80	0.64	1.20	5.13	6.16	7.05	7.69	3.59	53.27
2046	22.02	0.65	1.29	5.18	6.22	7.12	7.77	3.63	53.87
2047	22.24	0.65	1.37	5.23	6.28	7.20	7.85	3.66	54.48
2048	22.46	0.66	1.45	5.29	6.34	7.27	7.93	3.70	55.10
2049	22.69	0.67	1.54	5.34	6.41	7.34	8.01	3.74	55.72
2050	22.91	0.67	1.62	5.39	6.47	7.41	8.09	3.77	56.34

Source: CWA

Table 5. CWA Projected 50-Year Wholesale Demand and Supply

4/15/03

	Projected Wholesale Demand			Cascade Block Estimated - under negotiation			Tacoma Water Estimated - under negotiation			Lake Tapps Proposed Phased Development		
	ADD	Peak Season	Peak Month	ADD	Peak Season	Peak Month	ADD	Peak Season	Peak Month	ADD	Peak Season	Peak Month
2004	27.7	37.3	47.0	32.9	44.4	55.9						
2005	28.4	38.4	48.3	32.9	44.4	55.9						
2006	29.2	39.4	49.6	32.9	44.4	55.9						
2007	30.0	40.4	50.9	32.9	44.4	55.9						
2008	30.7	41.5	52.2	32.9	44.4	55.9						
2009	31.5	42.5	53.5	32.9	44.4	55.9						
2010	32.3	43.5	54.8	32.9	44.4	55.9	0.0	0.0	0.0			
2011	33.0	44.6	56.1	31.2	42.1	53.0	1.8	2.5	3.1			
2012	34.0	45.9	57.9	31.2	42.1	53.0	2.8	3.8	4.8			
2013	35.0	47.3	59.6	31.2	42.1	53.0	3.8	5.2	6.5			
2014	36.0	48.7	61.3	31.2	42.1	53.0	4.8	6.5	8.2			
2015	37.1	50.0	63.0	31.2	42.1	53.0	5.9	7.9	10.0			
2016	38.1	51.4	64.7	31.2	42.1	53.0	6.9	9.3	11.7			
2017	39.1	52.8	66.4	31.2	42.1	53.0	7.9	10.6	13.4			
2018	40.1	54.1	68.1	31.2	42.1	53.0	8.9	12.0	15.1			
2019	41.1	55.5	69.8	31.2	42.1	53.0	9.9	13.3	16.8			
2020	42.1	56.8	71.6	31.2	42.1	53.0	10.9	14.7	18.5			
2021	42.5	55.3	68.0	31.2	42.1	53.0	11.3	13.2	15.0			
2022	42.9	55.8	68.7	31.2	42.1	53.0	11.7	13.7	15.7			
2023	43.4	56.4	69.4	31.2	42.1	53.0	12.2	14.3	16.4			
2024	43.8	57.0	70.1	31.2	42.1	53.0	12.6	14.8	17.1	0.0	0.0	0.0
2025	44.2	57.5	70.8	26.2	35.4	44.5	15.0	20.0	25.0	3.0	2.2	1.3
2026	44.7	58.1	71.5	26.2	35.4	44.5				18.5	22.7	27.0
2027	45.1	58.7	72.2	26.2	35.4	44.5				18.9	23.3	27.7
2028	45.6	59.3	72.9	26.2	35.4	44.5				19.4	23.9	28.4
2029	46.0	59.9	73.7	26.2	35.4	44.5				19.8	24.5	29.1
2030	46.6	58.2	74.5	21.2	28.6	36.0				25.4	29.6	30.0
2031	47.1	58.9	70.7	21.2	28.6	36.0				25.9	30.0	30.0
2032	47.7	59.6	71.5	21.2	28.6	36.0				26.5	30.0	30.0
2033	48.2	60.2	72.3	21.2	28.6	36.0				27.0	30.0	30.0
2034	48.7	60.9	73.1	21.2	28.6	36.0				27.5	32.3	37.1
2035	49.3	61.6	74.0	16.2	21.9	27.5				33.1	39.8	46.4
2036	49.9	62.3	74.8	16.2	21.9	27.5				33.7	40.5	47.3
2037	50.4	63.0	75.7	16.2	21.9	27.5				34.2	41.2	48.1
2038	51.0	63.8	76.5	16.2	21.9	27.5				34.8	41.9	49.0
2039	51.6	64.5	77.4	16.2	21.9	27.5				35.4	42.6	49.8
2040	52.2	65.2	78.3	11.2	15.1	19.0				41.0	50.1	59.2
2041	52.8	66.0	79.2	11.2	15.1	19.0				41.6	50.8	60.1
2042	53.4	66.7	80.0	11.2	15.1	19.0				42.2	51.6	61.0
2043	54.0	67.5	81.0	11.2	15.1	19.0				42.8	52.3	61.9
2044	54.6	68.2	81.9	11.2	15.1	19.0				43.4	53.1	62.8
2045	55.2	69.0	82.8	6.2	8.4	10.5				49.0	60.6	65.0
2046	55.8	69.8	83.7	6.2	8.4	10.5				49.6	61.4	65.0
2047	56.4	70.6	84.7	6.2	8.4	10.5				50.2	62.2	65.0
2048	57.1	71.3	85.6	6.2	8.4	10.5				50.9	63.0	65.0
2049	57.7	72.1	86.6	6.2	8.4	10.5				51.5	63.8	65.0
2050	58.4	73.0	87.5	6.2	8.4	10.5				52.2	64.6	65.0
2051	59.0	73.8	88.5	6.2	8.4	10.5				52.8	65.0	65.0
2052	59.7	74.6	89.5	6.2	8.4	10.5				53.5	65.0	65.0
2053	60.4	75.5	90.6	6.2	8.4	10.5				54.2	65.0	65.0
2054	61.1	76.3	91.6	6.2	8.4	10.5				54.9	65.0	65.0

NOTES TO: Cascade Water Alliance - 50 Year Projected Supply and Demand; Wholesale Purchases

Basis for projections - Actual 2000 Seattle wholesale purchases and
SPU projections for 2011 and 2020 wholesale purchases by Cascade Purveyor Members
Demand includes addition for Coal Creek - 1.0 MGD in 2004 - 1.4 MGD in 2011 - 1.5 MGD in 2020

Demand increase from 2020	1.00%	annually				
Demand increase from 2030	1.00%	annually				
Demand increase from 2040	1.00%	annually				
Demand Peak Season factor	1.35	to 2020	1.30	2020 to 2030	1.25	2030 to 2054
Demand Peak Month factor	1.70	to 2020	1.60	2020 to 2030	1.50	2030 to 2054
Lake Tapps Phase 1 online in	2024	capacity of	30	MGD		
Lake Tapps Phase 2 online in	2034	capacity of	35	MGD		

Shaded areas indicate available supply not sufficient to meet projected demand *April 25, 2003*

3.8 Environmental Considerations

The following sections describe environmental considerations, including hydrologic, water quality, groundwater, and biological effects.

(d) 3.8.1 Potential Hydrologic Effects

(i) 3.8.1.1 White River Hydrology

This application is for withdrawals located in White River Watershed in Water Resources Inventory Area (WRIA) 10. The White River, a main tributary of the Puyallup River, originates in Emmons and Fryingpan Glaciers of Mount Rainier and has a drainage area of 494 square miles. Two instream structures in the White River have a significant influence on flows:

- Mud Mountain Dam at RM 29.5, which is operated by the U.S. Army Corps of Engineers solely for flood control; and
- The White River Hydroelectric Project diversion dam at RM 24.3, which diverts up to 2,000 cfs from the White River to Lake Tapps for hydropower generation.

Water diverted from the White River travels through an 8-mile-long flowline, with a fish screen and multiple sedimentation basins, before entering Lake Tapps. Lake Tapps is a 2,700-acre reservoir comprised of 13 dikes and is capable of impounding 46,700 acre-feet of water. The main outlet of Lake Tapps is the inlet to PSE's White River Hydroelectric Project. The White River Hydroelectric Project releases up to 2,000 cfs through the tailrace canal to the White River at RM 3.6. The approximately 21-mile-long reach of the White River between the diversion dam and the tailrace canal is referred to as the Bypass Reach.

(ii) 3.8.1.2 Description of Hydrologic Analyses

To evaluate the hydrologic impacts of the project, the applicant developed the Lake Tapps System Model using the Stella 7.0.1 software package. Stella was not specifically developed for water resources systems simulations; however, it has been extensively used in water resources modeling and is well suited for that purpose. The Lake Tapps System Model is a daily timestep, non-dimensional model that simulates flow or reservoir storage at select points between the Buckley diversion and the Puyallup River at Puyallup gage. The model routes water from one location to another according to logical statements based on the allowable diversion, a reservoir rule curve, generator capacity, etc.

Outputs from the model are time series of flow or reservoir elevation for the following locations:

- White River below Diversion Dam;
- Lake Tapps Water Surface Elevation;
- Lake Tapps Tailrace;
- Lower White River; and
- Puyallup River at Puyallup.

The primary inputs to the model are historical time series at the upstream boundary and other tributary locations. The model uses the following input time series:

- White River near Buckley;
- Boise Creek at Buckley;

- Puyallup River at the White/Puyallup Confluence; and
- Local Inflow at Auburn.

Flows for the White River near Buckley and Boise Creek at Buckley are historical data from the USGS gages at those locations. The Puyallup River at the White/Puyallup Confluence is calculated by subtracting USGS gage data from White River at Auburn and Lake Tapps Reservoir Diversion at Dieringer from the gage data at the Puyallup River at Puyallup. The local inflow at Auburn is a synthetic time series calculated by mass balance on Lake Tapps Reservoir (see TM 16 Section 3.5 for additional details). The local inflow at Auburn time series contains both positive and negative inflows and represents the following processes and sources of error:

- Measurement error (USGS stream gages, and Lake Tapps water surface elevation);
- Evaporation from Lake Tapps;
- Leakage from Lake Tapps;
- Leakage or Groundwater Inflow to the White River;
- Inflow to the White River between the Diversion Dam and Auburn;
- Inflow to Lake Tapps Reservoir and the Diversion Canal;
- Precipitation on Lake Tapps; and
- Surface water withdrawals from Lake Tapps.

The local inflow at Auburn series (with the addition of model residuals), shown in TM 16 Figure 3-14b, fluctuates from approximately –2200 to 5000 cfs, with most values ranging between –200 and 200 cfs. The negative numbers are associated with the addition of model residuals. It is of note that a small measurement error in the water surface elevation of Lake Tapps has a large influence on the local inflow at Auburn series, and it is likely that a sizeable portion of the series represents measurement error. Based on Figure 3-16, the local inflow series results in an overestimate of peak flows at Auburn.

The residual series was necessary to account for the errors and processes listed above, which are difficult to individually estimate. The applicant considered accounting for the processes at other locations in the model, but concluded that placing the residual series in the Bypass Reach was conservative from a flow perspective because it did not overestimate the quantity of water available for diversion or stored in Lake Tapps. The drawback of placing the inflow series on the Bypass Reach is that it is not conservative from a water quality perspective. If the series has a net positive bias (as indicated by Figure 3-16), using the series at Auburn essentially overestimates the quantity of higher quality water (White River water is generally higher quality than that of Lake Tapps) and may underestimate the impact of Lake Tapps on water quality in the White River below Auburn and the Puyallup River below its confluence with the White River.

The hydrologic model does not include hydraulic routing, travel times between gaging stations, or ramping rates, as described by the Preliminary Permit, because the processes operate on a time frame much less than a day and thus cannot be included in a meaningful way in a model with a daily timestep, which was also required by the Preliminary Permit. The water quality model includes hydraulic routing and consideration of travel times.

Reservoir elevations in Lake Tapps are calculated based on a relationship between storage volume and stage determined from a bathymetric study in 1956. The accuracy of the 1956 stage-storage relationship and its impact on the model results is discussed in the model limitations section.

1)

2) Baseline Condition

In order to perform the comparative analyses required by the Preliminary Permit, the applicant established a Baseline Condition from which to measure the impacts of the WSP. The Baseline Condition includes the following components:

- A new White River diversion dam with efficiency of 95 to 100 percent varying by month;
- Diversions from the White River that are always the maximum allowable multiplied by the diversion dam efficiency;
- Ramping rates specified in the FERC license;
- Higher White River Bypass Reach MIFs (FERC 2494, Agency 10j, and Preliminary Draft NMFS BiOp are simulated);
- No diversion canal maintenance outage periods; and
- Maintenance of recreational water levels from mid-April to mid-September of each year.

For modeling purposes, the baseline condition also assumed that hydropower generation was governed by a rule curve.

These conditions represent a fair Baseline for evaluating the impacts of the WSP because they represent the most likely future condition for operation of Lake Tapps Reservoir without the WSP; they are independent of the water supply project; and Ecology could condition the WSP to require that certain conditions (such as compliance with MIFs) are met. However, the Baseline Conditions do introduce a measure of uncertainty in interpreting the Lake Tapps System Model Results because Lake Tapps and the White River Hydropower Project have never operated under these conditions.

3) Normal, Dry, and Drought Climate Conditions

The Preliminary Permit required the applicant to evaluate the impact of the project on flows (and water quality) under Normal, Dry, and Drought conditions. The applicant conferred with Ecology on the procedure for selecting Normal, Dry, and Drought conditions. Normal, Dry, and Drought were defined as:

> *The 'normal' scenario is defined as a time-series with a percent exceedance of about 50 percent, the 'dry' scenario is defined as a time-series with a percent exceedance in the range of 75 to 85 percent, and 'drought' conditions are associated with percent exceedances from approximately 90 to 99 percent.*

The next step was to determine how to identify Normal, Dry, and Drought years. The applicant selected different Normal, Dry, and Drought years according to the following parameters:

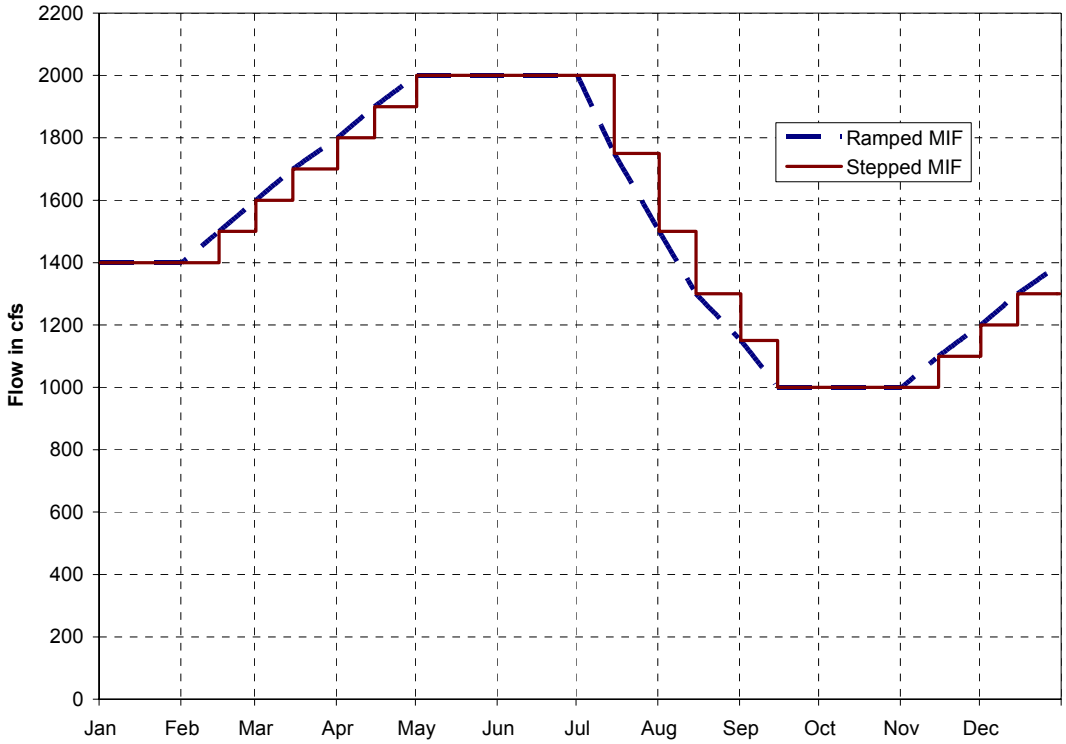
- Water year volume;
- Spring 7-Day low flow; and
- Fall 7-Day low flow.

4) Limitations of Hydrologic Analyses

There are several limitations to the modeling analyses performed by the applicant. These limitations were identified in the applicant's technical memoranda, the comment of letters of the Puyallup and Muckleshoot Tribes, and/or Ecology's own analyses. Ecology considered the limitations described below in evaluating the results of the modeling analyses.

1) "Stepped" Puyallup River at Puyallup MIF used in water quantity model

The application assumed that the Puyallup River MIF is stepped rather than smoothly ramped between the periods identified in WAC 173-510-030. This assumption is not appropriate, but was justifiable based on inaccurate regulatory input from WDFW and Ecology in the early phases of the project. The modeling and analyses were performed with the stepped MIF rather than the smoothly ramped MIF shown in the document titled *Puyallup River Basin Instream Resource Protection Program* (Ecology 1980*)* and referred to in the WAC. However, the impact of this error can be anticipated. The stepped MIF is conservative during the fall in that it is always higher than the actual ramped MIF (see figure below). However, in the spring the stepped MIF underestimates the actual MIF and is not conservative. Using the actual MIF in the analysis would reduce the quantity of augmentation water released in the fall and may reduce the level of lake drawdown. Using the actual MIF would also increase the need for augmentation water in the spring. Although use of the incorrect MIF incorporates an unnecessary error in the quantitative results, the model results are still a valid indicator of the impacts of the project.



Ecology. Comparison of Ramped and Stepped Interpretations of Puyallup River MIFs

2) Water quantity model does not simulate some hydrologic processes

The water quantity model does not simulate fundamental hydrologic processes such as evaporation, precipitation, stormwater inflow, or leakage from Lake Tapps. Rather, these processes are quantified by back-calculation and combined into a single residual time series, which is added to the model as local inflow to the Bypass Reach near Auburn. The residual time series does not change between Baseline and with WSP scenarios, which means that any changes in evaporation or leakage from Lake Tapps as a result of the WSP are not simulated. However, the WSP would not be expected to have a significant impact on evaporation or leakage because there would be little difference in the

general operation of Lake Tapps and over the long term the average reservoir elevation is not impacted. The short-term drawdown in water level in some dry and drought scenarios would not impact evaporation or leakage significantly enough to warrant modeling.

3) Calibration model runs use different assumptions than the scenario evaluation runs

The assumptions used during the calibration model runs differ slightly from the scenario evaluation model. The main differences in assumptions between the models are:

a) The calibration model uses historical inflow and outflow data from Lake Tapps. The scenario evaluations use calculated White River diversion and tailrace releases based on a diversion rule for the new diversion dam and a reservoir rule curve guiding hydropower releases.

b) The calibration model run uses synthetic White River near Buckley inflow data, while the scenario evaluation model runs use observed historical data. The synthetic series is equal to the observed historical data plus an error term. In the scenario runs the error term was added to the Bypass Reach.

The calibration runs necessarily use the historical inflow and outflow data from Lake Tapps, because historically Lake Tapps has operated primarily on the day to day decisions made by PSE to respond to the hydropower market. It would not be appropriate to simulate the future scenarios with these same historical data, because the Baseline case assumes significant changes (i.e., a new diversion dam, new Bypass Reach MIF, and operation of Lake Tapps according to a rule curve) that are not represented by the historical series.

The calibration model run used synthetic White River near Buckley flow data to correct for gage errors and the effects of unmeasured hydrologic processes such as evaporation. The synthetic series is back-calculated from the historical data for the White River at Buckley, Boise Creek, Lake Tapps stage, and tailrace release data.

During some periods, the synthetic series is greater than the historical observations. This is acceptable for calibration because it corrects gage error and represents unmeasured hydrologic processes. However, if the synthetic series were used for scenario evaluation runs, additional water would be available for diversion during these periods. This would result in a non-conservative simulation of the water supply reliability, effect on lake levels, and impacts on downstream flows. To avoid this situation, the historical White River near Buckley time series was used for the scenario runs rather than the synthetic series. The difference between the historical series and the synthetic series was added to the Bypass Reach as local inflow at Auburn. This residual series was truncated to remove negative flows.

Adding the model residual to the Bypass Reach concentrates the gage error and unmeasured hydrologic processes in one place. On average, the residual series adds 180 cfs to the Bypass Reach. The residual series is lowest during summer months and highest in winter months.

The calibration run uses slightly different assumptions than the scenario model runs regarding the location of the residual series. These differences are necessary, but do create additional uncertainty in reviewing model results. For the most part, locating the residual in the Bypass Reach is conservative, with the notable exception of its effect on the water quality model as discussed below. Since the location of the residual did not change between scenario runs, the uncertainty does not impact the relative change with and without the WSP.

5) Over estimate of Bypass Reach flows caused by truncating the residual affects the water quality model.

For the scenario runs, the residual series was truncated to remove negative values. These negative values would produce unrealistic flows in the White River. Removal of negative values introduces a positive bias (an overrepresentation of flows) of 34 cfs on average (HDR 2003a). During the critical months of September and October, the bias introduced by truncating the residual series is lower than the average of 34 cfs.

Over estimating Bypass Reach flows affects the accuracy of the water quality model. In general, water quality in the Bypass Reach is better than that of the tailrace (e.g., higher DO, lower temperature). By overestimating the amount of higher quality White River water that mixes with lower quality tailrace releases, the model over estimates the water quality in downstream reaches. This impact has not been quantified, but is expected to be minor since the bias is considerably less than the quantity withdrawn for the water supply. Both the Baseline and with WSP scenarios for the water quality model are affected by the bias, so the bias affects the accuracy of the model, but not the relative differences between the scenarios.

6) Stage-storage relationship is based on 1956 data and may not represent changes from sedimentation.

The stage-storage relationship plays an important role in the reserve routing procedure used to calculate the local inflow at Auburn series, and in the simulation of Lake Tapps water levels. HDR evaluated bathymetric data from 1913, 1929, 1956, and 1980 and determined that Lake Tapps bathymetry had not changed significantly (i.e., the change was within 4 percent). Recent sedimentation may impact the accuracy of the stage-storage relationship, but sedimentation would mostly affect dead storage (storage below the minimum outlet elevation of 515 ft msl) and based on the comparison of bathymetry data over 70 years does not appear to be significant in the upper active storage portion.

7) Modeled daily Flow Augmentation Plan (FAP) is not the same as the FAP ultimately proposed

After water quantity and quality modeling was completed, the applicant, in response to comments from Ecology, made several significant revisions to the FAP. This section describes the changes to the FAP and conceptualizes how the FAP changes would impact the model results.

First, the FAP was revised to target hourly MIF excursions rather than daily average MIF excursions. The prior (daily average) plan included three plan components: avoidance, refill restriction, and enhancement. This plan was targeted to daily average MIF excursions and would have resulted in the release of augmentation water through extended hours of hydropower generation.

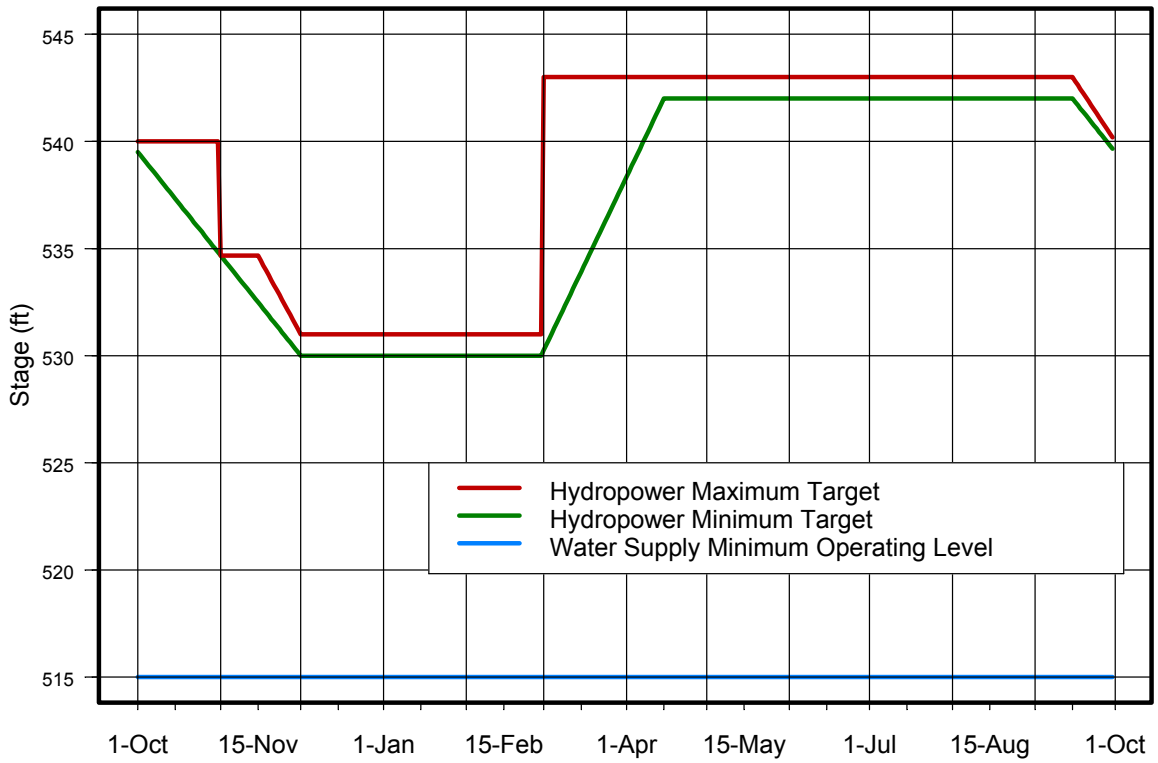
Later, the applicant revised the hourly plan to remove enhancement water and add Bypass Reach flows of 250 cfs during February through April. In addition, the Reservoir Management Plan was amended to include three conditions aimed at ensuring that the WSP would not cause or exacerbate an MIF excursion by reducing hydropower releases during low flow periods. These conditions are substantially similar to the component of the daily FAP previously labeled "refill restriction."

On a daily average, the currently proposed FAP results in the release of the same amount of water as the daily FAP simulated in the modeling. Because the daily average release remains the same, the model results are valid for evaluating the current plan. The 250 cfs Bypass Reach flows for February through April are included among the Bypass Reach MIF scenarios evaluated—thus the model results already include this component of the FAP. The main difference between the daily plan and the

hourly FAP is that the hourly FAP releases are distributed more evenly throughout the day. This would reduce the magnitude of water quality impact from FAP releases, but the duration of impact would increase because releases occur for more hours of a typical day.

8) Real world hydropower operations are more complex than rule curve included in model

For modeling purposes, the Reservoir Management Plan was simulated as a rule curve (TM 16 Figure 7-1, included below). Rule curves are a necessity for modeling hydropower projects because the complex, economic nature of day-to-day hydropower generation cannot be accurately simulated. The modeled rule curve governs reservoir operations by assuming that hydropower is generated whenever water is available. Water is available for hydropower generation, when the water surface elevation is at or above the minimum hydropower rule curve, (green line in TM 16 Figure 7-1). Below the minimum hydropower rule curve, water is available only for municipal water supply and flow augmentation.



TM 16 Figure 7-1 Lake Tapps Reservoir Hydropower Rule Curve Modeling Assumptions

TM 16 contains the following caveat for the rule curve:

"… the rule curve is used as a conservative estimate of the hydropower operations to predict the potential impacts of the proposed water supply project downstream of the tailrace canal. The hydropower rule curve guides the modeled hydropower daily withdrawal from the reservoir under a management scenario consistent with reservoir levels discussed with the Lake Tapps Reservoir interest groups. In practice, future reservoir levels will fluctuate in response to day-to-day hydropower generation decisions, and PSE will continue to operate the reservoir under the terms and

conditions of the FERC license. The reservoir operations to address other issues are still under consideration in the LTTF, and the rule curve is subject to change."

In future operations with or without the WSP, the project would not operate according to a rule curve, and after fulfilling water supply, FAP, and recreation commitments as outlined in the RMP would instead continue to make day-to-day hydropower decisions as had been done historically. While the model assumed that each day all the water available for hydropower was released, in real operations, PSE times its hydropower releases for economic reasons and may choose to not generate or to only generate with some of the available water in order to generate at a more economically beneficial time later. For example, PSE periodically elects not to generate power on weekends in order to have more water for generation during the weekdays. In the model, releases occur whenever water is available, including weekends.

It is important when looking at model results to understand that the rule curve operations used in the model result in timing of hydropower releases that may not represent what would actually occur. With the understanding that the economic forces that dictate the timing of hydropower production would be the same with or without the WSP, for analysis purposes it was fair (and necessary) eliminate these forces and instead govern hydropower generation by a rule curve.

However, the WSP would reduce the amount of water available for hydropower production. In order to try and ensure that hydropower releases would not be reduced during periods of MIF excursion that are not corrected by avoidance water, PSE included three conditions in the RMP that limit their ability to increase reservoir storage at the expense of hydropower releases. Under the specific conditions of the RMP, PSE would: (1) not fill the reservoir during winter, (2) would not fill the reservoir during summer if below target elevations, and (3) would not fill faster than otherwise planned during spring. These conditions of the RMP are consistent with the rule curve used in the modeling analysis.

The third condition of the RMP deals specifically with PSE's flexibility to set earlier target dates for refilling in spring. Conceptually, if an unreasonably early target date is set, the maximum refill rate during periods of restriction could be established such that downstream benefits to instream flow as a result of hydropower generation are minimized. Historically, PSE has maintained a relatively consistent spring refill period, and thus Ecology does not anticipate that an unreasonable early target data would be set. With the reasonable selection of a target start date the project would not cause or exacerbate MIF excursions relative to those that previously occurred.

5) Scenarios Evaluated with Water Quantity Model

The Lake Tapps Systems Model was used to evaluate scenarios representing each possible combination of the following criteria:

- Water Supply – without WS, with WS - Fall max demand, and with WS - Spring max demand.
- White River Bypass Reach MIFs – FERC 2494, Agency 10j, and Preliminary Draft NMFS BiOp.
- Climate Scenario – Normal, Dry, and Drought.
- Climate Series Selector – Water year volume, Fall 7-day low flow, Spring 7-day low flow.

Additional scenarios were included for specific purposes (e.g., period of record and no diversion runs) bringing the total scenario model runs evaluated to 140. With the exception of the period of record runs, each model run represents one year.

(iii) 3.8.1.3 Results of Hydrologic Analyses

1) Water Supply Availability

Sufficient water was available in all scenarios (Normal, Dry, and Drought) to meet water demand and source exchange needs (modeled as 83.3 to 150 cfs depending on the scenario). Withdrawal for water supply was modeled as the highest priority use of water from Lake Tapps. Although water surface elevation of Lake Tapps was occasionally drawn down from the rule curve, the water surface elevation never approached the minimum for water supply withdrawal of 515 feet. This indicates that water would reliably be available for water supply or source exchange even during Drought scenarios.

2) Potential Effects of the WSP on White River – Bypass Reach

The WSP would not have detrimental impacts to the Bypass Reach because Bypass Reach flows would not decrease as a result of the WSP and no changes are proposed to the diversion structure specifically for the WSP. Replacement of the diversion dam has been proposed as a component of the FERC licensing and was included in the flow modeling. However, any flow impacts of the replacement diversion dam were not considered in this analysis and are assumed to be evaluated during permitting for the replacement diversion dam.

The WSP includes operation of the diversion dam to ensure minimum flows of 250 cfs in the Bypass Reach from February through April. These flows would be beneficial to aquatic habitat and water quality (specifically lowering pH) in the Bypass Reach. The benefits of the 250 cfs flows in the Bypass Reach on lowering pH are evaluated in Section 3.8.3.5.

3) Potential Effects on Lake Tapps Reservoir

Under the rule curve used for modeling purposes, the water level in Lake Tapps would ideally be maintained at near full pool (elevation 542 feet) from mid-April through mid-September. The WSP and Flow Augmentation Plan would cause occasional drawdown from recreational levels to avoid MIF violations in the Puyallup River. In most Normal year scenarios, there was no significant drawdown (i.e., no drawdown greater than 0.5 foot). But some Normal scenarios indicated drawdown of up to 1 foot for periods of several weeks in late August and September. Most Dry year scenarios also had no significant drawdown. However, the Dry year fall 7-day low flow scenarios had several weeks of drawdown greater than 1 foot periodically through the summer with a maximum drawdown of 2.5 feet by mid-September. All Drought scenarios indicate 3 or more weeks of drawdown with a maximum decrease in water level of up to 3.5 feet.

Most of the time (represented by Normal and some Dry scenarios) recreation would not be impacted by operation of the WSP. During some Dry and all Drought scenarios, the drawdown would impact recreation on Lake Tapps for a portion of the summer. The Dry scenarios represent a range of 78 to 84 percent exceedance, which corresponds to a recurrence interval of roughly 1 in 5 years. The Drought scenarios represent a range of 93 to 97 percent exceedance or recurrence intervals of 1 in 14 to 1 in 33 years. Based on these definitions, drawdown sufficient to impact recreation could be expected to occur in 1 in 5 years. Hot summer temperatures or a late return of fall rains occurring during Dry or Drought conditions, may exacerbate any water level drawdown by increasing the desirability of water recreation.

Reservoir drawdown is not limited to the summer recreation period. Drawdown also would occur during draft, winter low pool, and refill periods constituting the remainder of the year. However, water levels during these periods are normally below the recreational level and any additional drawdown during these periods does not constitute an impact to recreation.

The drawdown of the reservoir may have impacts on in-lake fish populations and reservoir water quality that were not evaluated. However, the magnitude of these impacts is expected to be small because the change in water surface elevation is not significant in the context of aquatic habitat or lake water quality processes.

4) Potential Effects of the WSP on the Lower White River

Summary of Project Impact. To assess the impact of the project on the Lower White River the applicant presented hydrographs at several points in the system for each of the scenarios evaluated (TM 16 Appendices D and E). This discussion summarizes the impacts shown in the hydrographs. Where changes in flow are described these represent only visual estimates from the hydrographs.

In general, the impact of the WSP on flow in the lower White and Puyallup Rivers varies depending on how the reservoir is operating. Although the applicant did not use the following categories in presenting their analyses, Ecology finds it useful in understanding the impact of the WSP to define the following periods of reservoir operations:

Regular Operations. For this discussion, 'regular' operations occur whenever the Puyallup River is at or above the MIF. During regular operations, the model assumes that the water supply would be withdrawn at a continuous rate of 150 cfs during the 3 months of maximum demand and 83.3 cfs during the remaining 9 months. Hydropower releases would occur according to the rule curve. The impact during regular operations would be a reduction in daily average flow in the lower White River equal to the water supply withdrawal (modeled as either 83.3 or 150 cfs).

Flow Augmentation. Avoidance water releases and releases made because of the conditions on refill in the RMP, collectively termed 'augmentation' in this section for ease of reference, would be triggered when the water project is withdrawing water from the reservoir and the Puyallup River was projected to fall below the MIF. Avoidance releases would occur during non-generating hours and would partially fill in the "troughs" as indicated by the hourly basis lines in the figures in the HDR memo dated 6/12/03 (Attachment 1). Hydropower releases under the RMP would continue to occur as a hydropower peaks. Generally, during augmentation the release from Lake Tapps with the water supply would be either at or above the release without the water supply. In some cases when the MIF shortfall is less than the quantity withdrawn for water supply, the release would be less than without the water supply; however, this is not as typical as other cases. Augmentation could happen anytime during the year, but would be most typical in the Spring and Fall. Not surprisingly, the model predicts that periods of augmentation would be more prominent during Dry and Drought years, but some augmentation would be necessary during periods of all years simulated.

The modeling indicates that on days with MIF excursions augmentation could result in flows with the WSP that are higher, lower, or exactly the same as Baseline flows (e.g., Figure 4; HDR 2002b). Typically, flows during augmentation were predicted to be within –200 to +100 cfs of the Baseline flows. Flows that matched or exceeded Baseline were the most common results during augmentation, but lower flows did occur. On days with MIF excursions, flows lower than Baseline would occur only when the full use of avoidance water was not required to meet the MIF and thus some flow was available for reservoir refill. Most frequently flows with the WSP matched Baseline flows on MIF excursion days, and there are numerous combinations of conditions that can result in this outcome. Finally, on MIF excursion days, higher flows with the WSP would occur only when the MIF shortfall was greater than the Baseline release, and the Baseline release was less than the quantity of water withdrawn for water supply.

Post-Augmentation. After periods of flow augmentation (referred to as 'post-augmentation') and when the Puyallup River flow was no longer below the MIF, hydropower releases from Lake Tapps

were curtailed in modeling scenarios until the water-surface elevation reached the minimum hydropower generation rule curve. Results indicate that reduced flow during post-augmentation was predicted to last up to one month (e.g., TM 16 Figure D-18), but more typically was less than two weeks. The magnitude of reduction during post-augmentation varied and was generally equal to the rate of diversion from the White River less the 30 cfs leakage through the hydropower plant. The magnitude of this reduction was as large as 1,200 cfs (e.g., Figure D-23d), but more typically was less than 400 cfs.

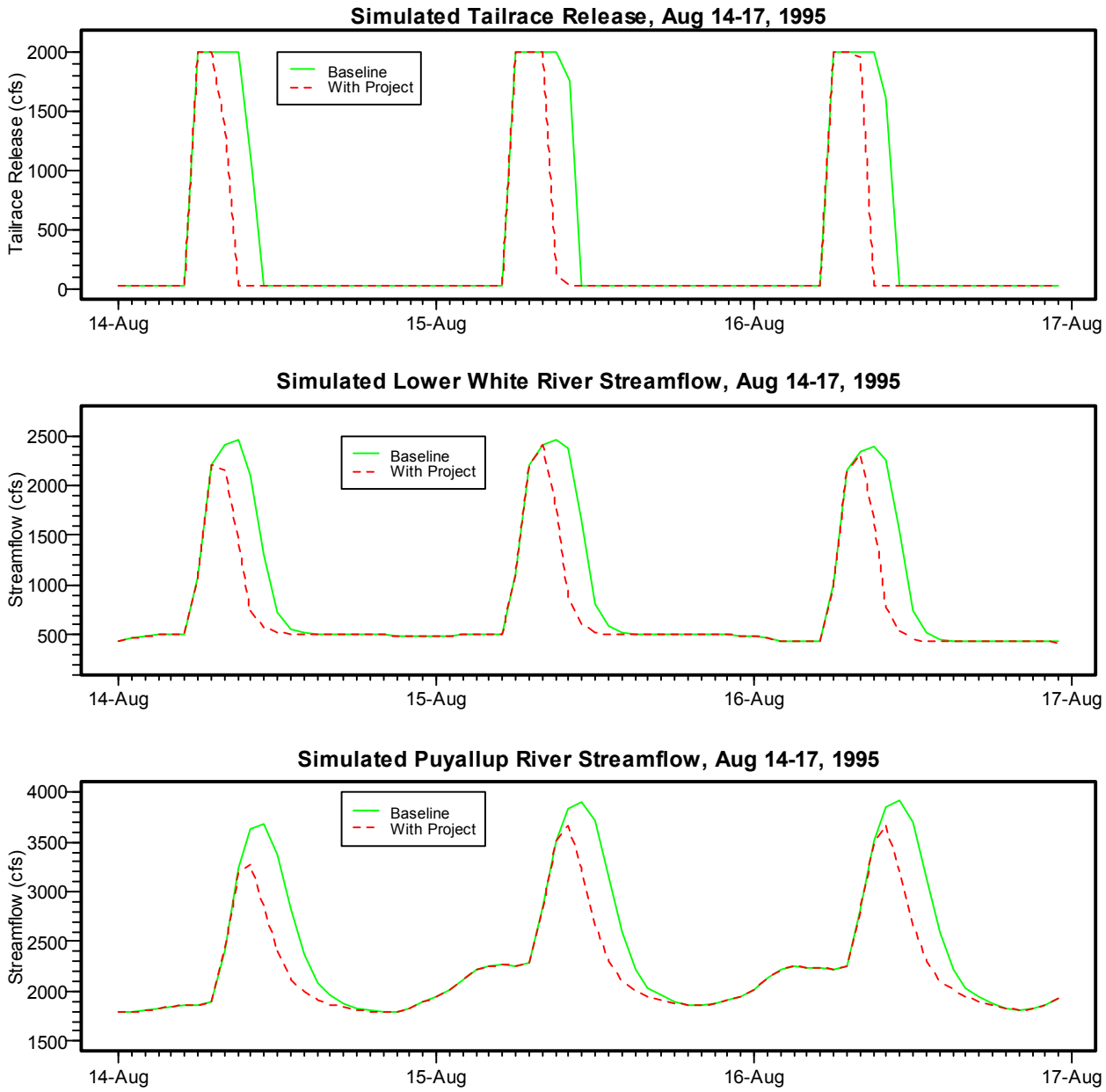
7Q10 & 7Q20. The applicant analyzed the effect of the WSP on the 10-year, 7-day low flow (7Q10) and 20-year, 7-day low flow (7Q20) by performing statistical analyses on the period of record model runs. The limitations of this technique are that the results do not correspond directly to the previous estimates of 7Q10 and they are statistically weak because only 11 years of data (1991 to 2001) were used to predict low flows with recurrence intervals of 10 and 20 years. Given these limitations, the estimates of 7Q10 and 7Q20 should be viewed as an indicator of the potential impact rather than a quantitative prediction of the impact.

In all cases evaluated, the 7Q10 and 7Q20 flows increased from the historical values for both the lower White River and the Puyallup River. This is primarily a result of the higher White River Bypass Reach MIFs. Of the White River Bypass Reach MIFs evaluated, scenarios with the Agency 10j flows produced the greatest increase in 7Q10 and 7Q20 flows followed by the Preliminary Draft NMFS BiOp flows, then the FERC 2494 flows. The 7Q10 and 7Q20 flows in the lower White River approximately doubled regardless of the MIF.

Understanding Model Results in an Hourly Operational Context. The modeling results described above present predicted flows on an average daily basis, as is appropriate for a daily time step model driven by daily average input time series. However, the hydropower project releases vary significantly within the day depending primarily on the demand for electricity and the amount of water available for hydropower generation.

In a given day, the hydropower facility either operates in a load-following or baseload mode depending on the amount of water available for generation. Load-following operations create a pattern of once or twice daily peaks in generation during which the tailrace release fluctuates from 30 cfs during periods without generation up to 2,000 cfs during the hours of peak generation. Figure 5-1 of TM 26 (included below) illustrates a typical hydropower release during single peak, load-following operations.

Load-following operations require at least 99 acre-feet (50 cfs for 24 hours) of water. At 99 acre-feet, hydropower is generated in a single, 4.5-hour peak at 260 cfs usually in the morning. As more water is available, the generation rate increases up to the maximum of 2,000 cfs, and the duration of the peak increases. Eventually, a second peak is added, the two peaks increase until they grow together (Figure 5-2 TM 26), and finally night generation is added.



TM 26 Figure 5-1. Simulated hourly tailrace canal release and streamflow in the lower White River (RM 1.2) and Puyallup River (RM 5.6) for normal fall low flow conditions, FERC 2494 minimum instream flows (MIFs), and fall maximum water supply demand

During periods with a surplus of water available for hydropower generation, PSE may generate power in baseload mode. During baseload operations the power generation is continuous throughout the day and may continue for several days. Baseload operations typically occur during spring, when more water is available because of snowmelt. Single-peak and double-peak load following operations are the most common and typically occur throughout the remainder of the year.

The impact of the WSP on daily average flows, discussed at length in the applicant's analyses and above, would physically occur as a changed generation pattern resulting from less water being available for generation that day. Most typically this would occur as a reduction in the duration of the

load following peak. For example, a 150 cfs reduction in daily average flow as a result of the water supply withdrawal would occur as a 1.8-hour reduction in peak generation at 2,000 cfs. The following list provides other less likely examples of how a reduction in daily average flow might manifest in hourly operations:

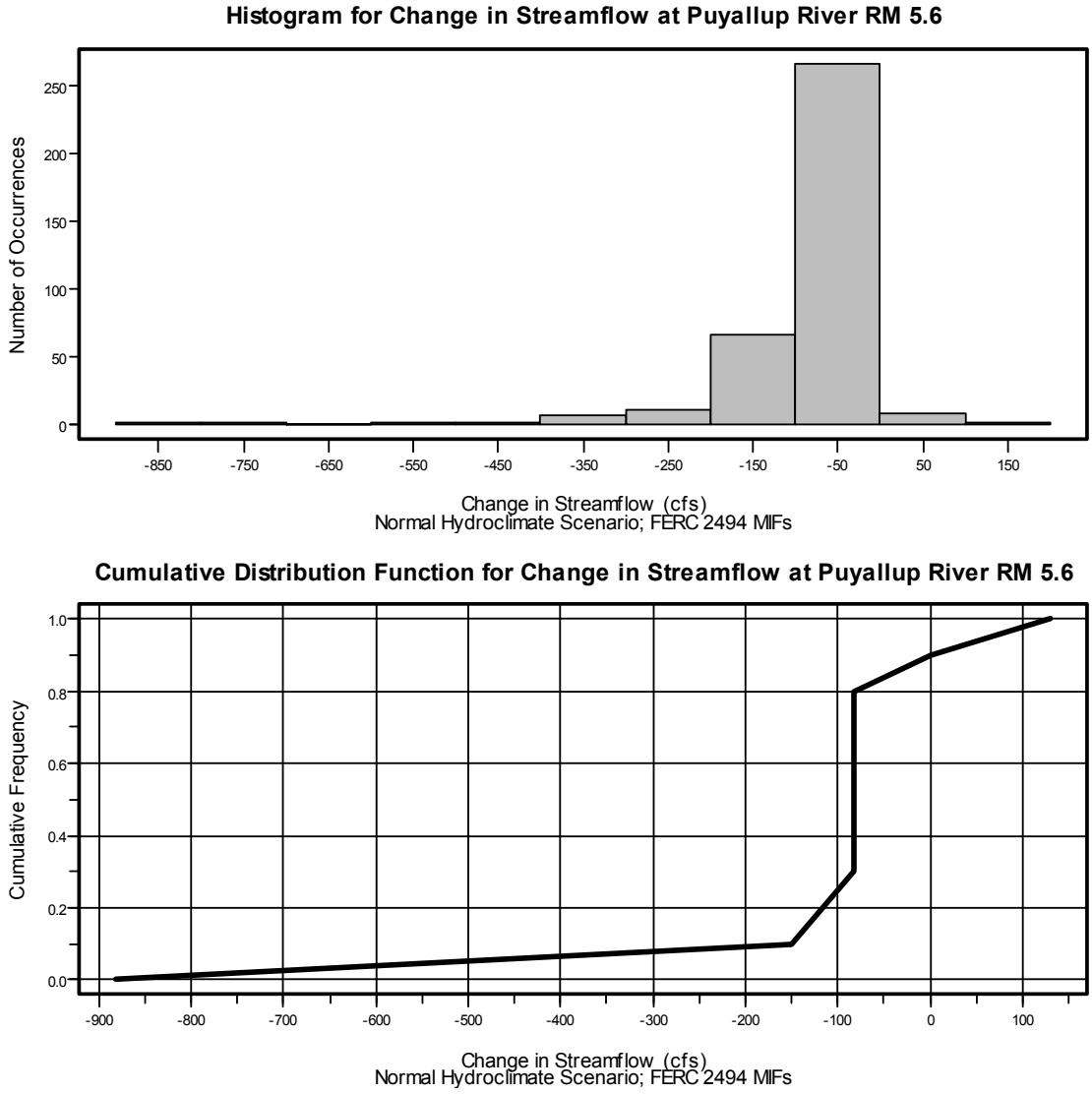
- Changes from two peaks a day to a single peak;
- Reductions in the magnitude of a single 4.5-hour peak;
- Reductions of the duration in hours or days that baseload operation occur; and
- Changes from single peak generation to no generation.

Essentially, reductions in flow as a result of the WSP are expressed as a changed pattern of hydropower generation (i.e., a step backward on the pattern of increasing generation described above).

5) Potential Effects of the WSP on the Lower Puyallup River

The impact on flows in the lower Puyallup River were predicted to be similar to that on the lower White River except that: (1) the relative magnitude of change was much lower because of the inflow from the mainstem Puyallup and tributaries; and (2) the timing of the change was slightly affected by routing during travel downstream. The effects of routing primarily impacted hourly flows, since the travel time from tailrace to Commencement Bay is typically less than 24 hours (HDR 2002b). Figures 5-1 (included above) and 5-2 in TM 26 illustrate the downstream attenuation effect of routing on hourly flows. It should be noted that on Figure 5-1, the impact of WSP was purely a shortened duration of peak flows at the tailrace, but further downstream the impact was both a change in duration and magnitude.

A histogram and cumulative distribution function for the change in daily average streamflow at the Puyallup River at Puyallup is presented on Figures 12 (included below) and 13 in HDR 2002b. The histograms indicate that the WSP would increase flows in the lower Puyallup 10 percent of the time, reduce flows by less than 150 cfs 80 percent of the time, and reduce flow by more than 150 cfs 10 percent of the time. It is predicted that the maximum reduction in flow would be 850 cfs.



HDR 2002b Figure 12. Statistical summary of change in mean daily streamflow (project minus Baseline scenario) for the normal hydroclimate scenario and FERC 2494 MIFs

Puyallup River MIF Excursions. This section evaluates the impact of the WSP on flows below the Puyallup River MIF. In this discussion, flows below the Puyallup River MIF are termed MIF excursions and the difference between the flow and the MIF is termed the MIF shortfall. For example, if the Puyallup River flow were 800 cfs at a time when the MIF was 1000 cfs, the MIF shortfall would be 200 cfs.

The modeling analysis concluded that all scenarios with the WSP would have a positive impact in reducing the number and volume of Puyallup River MIF excursions (TM 16 Table 6-5). Typically, the number of MIF excursions would be reduced by 20 to 30 percent and the volume of MIF excursions (expressed in acre-feet of shortfall) would be reduced by less than 20 percent.

The FAP would be effective in preventing Puyallup River MIF excursions attributable to the WSP. The FAP addresses MIF compliance on an hourly basis and daily average basis. The avoidance water

release increases flows during any non-generating hours when flow is below the MIF. Avoidance water would be continuously released at a rate up to the water supply withdrawal during periods when the Puyallup River flow is predicted to be below the MIF. As avoidance water releases occur during the lowest flow periods of the day, the FAP would provide a benefit to instream aquatic habitat beyond simply offsetting the reduction in flow caused by the water supply withdrawal and complying with numerical MIFs. The reduction in flow caused by the water supply withdrawal occurs as a shortened duration of hydropower generation and might affect a few hours at the end of the generation peak.

Water Levels in the Lower Puyallup. The effect of the WSP on water levels in the lower Puyallup is important for evaluating the impact on habitat restoration projects and aquatic habitat in general. The applicant presented stage exceedance curves (Figures 8, 9, and 10 HDR 2002b) and a statistical analysis of the predicted change in stage (Table 2 HDR 2002b) for Normal, Dry, and Drought conditions. As with other impacts, the change in stage is expected to be greatest near the tailrace and would diminish downstream. In the lower Puyallup River, the average reduction in water surface elevation as a result of the WSP was between 0.07 and 0.14 foot and the maximum reduction would be between 0.21 and 0.42 foot depending on location. Because this reduction occurs as a shortened duration of the hydropower peak, the stage in the lower Puyallup would be unchanged for most of the day, but would be reduced by 1 foot or more for a few hours (Figure 6 and 7, HDR 2002b).

(e) 3.8.2 Potential Effects on Area Groundwater

Under current operating conditions, the reservoir accounts for approximately 5 to 35 percent of the average annual recharge to groundwater occurring on the Lake Tapps Uplands. The remaining 65 to 95 percent are the result of infiltration of precipitation falling on the uplands outside of the reservoir. Groundwater recharge from the reservoir is directly tied to reservoir level and the resulting hydraulic gradient between the reservoir and points of groundwater discharge (e.g., Coal Creek Springs, Salmon Springs, etc.). Relative to a current mean reservoir level of 538 feet, a one foot drop in reservoir level would result in an approximately 0.3 percent reduction in the gradient (and resulting leakage) between Lake Tapps and the points of groundwater discharge. Because of the long travel time of groundwater within the aquifer(s), a short-term drop in the elevation of the reservoir should mainly be viewed in terms of its effect on the average water level in the lake over the long-term.

Under the proposed changes in operations, average annual water level would be virtually unchanged, remaining within one foot of average water levels under current conditions. The water level in Lake Tapps would be maintained at near full pool (elevation 542 feet) through the summer recreation period. However, the WSP would cause occasional drawdown of reservoir water levels to avoid MIF violations in the Puyallup River. Most Normal and Dry year scenarios modeled for the reservoir indicated no significant drawdown. However, some Normal scenarios indicated drawdown of up to 1 foot for periods of several weeks and some Dry year scenarios had several weeks of drawdown greater than 1 foot, with a maximum drawdown of 2.5 feet.

Under Drought conditions, 3 or more weeks of drawdown of up to 4 feet below current operational levels may occur. Although drawdown of this magnitude would result in decreased recharge to the underlying aquifers and surface water springs, the magnitude of the reduced recharge would be relatively insignificant. The predicted worst case Drought drawdown is an average of 1.7 feet over a period of 29 days. This would represent an approximately 0.6 percent decline in the contribution of Lake Tapps water to recharge over the 29-day time period. If normal lake levels were maintained throughout the rest of the year, this would represent a 0.05 percent decline in recharge from Lake Tapps on an annual basis. Given that leakage from Lake Tapps accounts for between 5 and 35 percent of total recharge from the Lake Tapps Uplands, the resulting reduction in net recharge from

the uplands would be approximately 0.03 to 0.2 percent over the 29-day period, and 0.002 to 0.02 percent on an annual basis.

(f) 3.8.3 Potential Water Quality Effects

(i) 3.8.3.1 Existing Water Quality Conditions in White River and Puyallup River

Water quality within the Puyallup-White Watershed is impacted by both natural and human influences (Ecology 1995). Natural influences on water quality include increased suspended sediment due to glacial runoff and landslides. Glacial melt contributes a high load of fine sediment, particularly during the summer. Human influences include logging, clearing and grading, urbanization, failing septic systems, and industrial, agricultural, and residential stormwater. Most of the water quality problems occur in the White and lower Puyallup Rivers (Ecology 1995) with the notable exception of temperature problems in the upper White River (Ecology 1998a). Surface water quality criteria for fecal coliform and temperature are being exceeded for much of the White-Puyallup Watershed (Ebbert et al. 1987; Ecology 1998b).

Biannually Ecology prepares a Section 303(d) list of all water bodies that do not meet the Surface Water Quality Standards (WAC 173-201A). This list is required by the EPA in accordance with the Clean Water Act. In the 1998 303(d) list (Ecology 1998b) the following water bodies and impairments were listed for reaches downstream of the proposed project.

- Lower Puyallup River: arsenic and fecal coliform.
- White River: temperature, pH, fecal coliform, mercury, copper, and instream flow.

Ecology has committed to having Water Cleanup Plans or Total Maximum Daily Loads (TMDLs) for all waters on the 1996 303(d) list by 2013. TMDLs were approved in 1994 for BOD_5, and ammonia-N in the Puyallup River and antidegradation in Boise Creek. Ecology also established reserve allocations for BOD_5 and ammonia-N through the TMDL and a subsequent multi-party agreement. In December 2000, Ecology placed a moratorium on allocations of the reserve capacity of BOD_5 and ammonia as a result of measured dissolved oxygen concentrations below the state water quality standards. TMDLs or other water quality-based plans are currently under development for the upper White River Watershed for temperature and fish habitat, and the Bypass Reach of the lower White River for pH.

(ii) 3.8.3.2 Water Quality Concerns and State and Tribal Water Quality Standards

The primary water quality parameters of concern in the lower White and Puyallup Rivers are temperature and dissolved oxygen. The White and Puyallup Rivers downstream of the diversion dam are Class A waters of the state (WAC 173-201A), with the exception of RM 0.0 to 1.0 on the Puyallup which is Class B. The Class A and Class B water quality standards are shown in Table 5.

Table 5. State Water Quality Standards

Parameter	Class A Standard	Class B Standard
Dissolved Oxygen	≥ 8 mg/L	≥ 6.5 mg/L
pH	6.5 ≥ pH ≤ 8.5	6.5 ≥ pH ≤ 8.5
Temperature	≤ 18 °C	≤ 21 °C

Washington State's water quality standards also include a description of beneficial uses, and an anti-degradation strategy. The beneficial uses of the Class A streams include:

- Water Supply (domestic, industrial, agricultural);
- Stock Watering;
- Fish and Shellfish: migration, rearing, spawning, harvesting;
- Wildlife Habitat;
- Recreation; and
- Commerce and Navigation.

The beneficial uses associated with Class B waters are similar to those for Class A waters with the following exceptions: Domestic water supply; salmonid spawning; and clam, oyster, and mussel harvesting are removed and secondary water contact recreation replaces primary contact recreation.

The Puyallup Tribe of Indians has been delegated federal Clean Water Act authority to administer water quality standards in the Puyallup River within its reservation. The Puyallup Tribe has established Water Quality Standards for Surface Waters of the Puyallup Tribe (63 FR 53911), which includes the reach of the Puyallup River in the reservation. At this time, the numeric criteria and antidegradation requirements of those water quality standards are equivalent to the state water quality standards described above.

(iii) 3.8.3.3 Water Quality Monitoring Results

During August through October 2001, continuous water quality monitoring was performed at Lake Tapps tailrace and White River at RM 4.9 by HDR, and White River at RM 1.8, Puyallup River at RM 5.8, and Puyallup River at RM 2.9 by USGS. Dissolved oxygen (DO), temperature, pH, and specific conductance were monitored continuously, and HDR collected water quality samples every two weeks for a suite of analyses.

Monitoring results are described in TM 19 and Ebbert (2002). Levels of DO, temperature, and pH were in violation of state water quality standards on one or more occasions. DO violations occurred on multiple occasions in the Lake Tapps tailrace and on two occasions in the White River at RM 1.8. Temperature violations occurred at White River locations upstream (RM 4.9) and downstream (RM 1.8) of the tailrace. pH violations occurred only in the Bypass Reach of the White River.

Analysis of the difference in water quality between the Lake Tapps tailrace and the White River upstream of the tailrace is important for understanding the potential impact of the WSP. Generally, water in the Lake Tapps tailrace has higher temperatures, lower DO, and a lower pH than those in the White River Bypass Reach. The differences between Lake Tapps and the Bypass Reach for specific parameters can vary considerably throughout the year. However, on average temperature is 1.7 °C higher and DO is 0.7 mg/L lower than the White River, and pH is 0.62 units lower in the tailrace than in the White River at RM 4.9. The White River at RM 4.9 had wider temperature and pH ranges, and produced multiple violations of the standards for each parameter. DO in the tailrace had a larger range (6.2 to 13.4 mg/L) than those in the White River, in part, because high DO concentrations are produced during periods when the generators do not operate, and because of the approximately 30 cfs that sprays through the gates becomes aerated as it enters the tailrace.

Temperature and DO profiles were collected from Lake Tapps Reservoir near the intake to the Dieringer powerhouse on 4 days in August through October 2001. The profiles (Figure 2-11 in TM 19) indicate thermal and DO stratification during one event in August followed by turnover and mixing in September and October. Stratification occurred at 5 meters below the surface.

(iv) 3.8.3.4 Description of Water Quality Analyses

The applicant used two water quality models, CE-QUAL-W2 and QUAL2E, to evaluate the impact of WSP on the lower White and Puyallup Rivers. CE-QUAL-W2 is a two-dimensional hydrodynamic unsteady flow model capable of dynamic simulation of multiple water quality parameters on an hourly timestep. QUAL2E is a one-dimensional steady state model that can simulate most of the same parameters as CE-QUAL-W2 with the notable exception of pH. CE-QUAL-W2 was used for the majority of water quality analyses. QUAL2E was used to evaluate impacts on NPDES permit holders and the Puyallup River TMDL (Pelletier 1993 and 1994). Only CE-QUAL-W2 is discussed in the remainder of this section, QUAL2E is discussed again in the NPDES and TMDL sections.

This section summarizes some of the key aspects of the CE-QUAL-W2 model. A more detailed description is presented in Section 5 of TM 25.

1) Period Simulated

The applicant developed fall and spring CE-QUAL-W2 models. The fall model simulates June through September, and the spring model simulates March through May. Boundary conditions are based on 2000 and 2001 monitoring data. The spring model only simulates hydrodynamics and temperature because insufficient water quality data were available to develop good boundary conditions for the spring months.

2) Model Extent

The model simulates 15.5 miles of the lower White and Puyallup Rivers, extending from RM 5.4 on the White River (2 miles above the tailrace) to the Puyallup River's entrance into Commencement Bay. The model is divided into 0.2-mile segments. Channel geometry was based on cross section data from Ecology's HEC-2 model. CE-QUAL-W2 is two-dimensional simulating longitudinal and vertical, but not lateral, processes. Thus, cross sections were modified to be symmetrical.

3) Boundary Conditions

Flow and water quality information is required at all boundaries of the model (i.e., upstream, any tributaries, and downstream because of tidal influence). Boundary conditions have a large impact on the model results and establishing good estimates of boundary conditions is critical for accurately simulating water quality. The boundary conditions included in the models were:

- White River at RM 5.4;
- Lake Tapps Tailrace;
- Puyallup River at the confluence with White River;
- Five NPDES discharges;
- Clarks Creek;
- Clear Creek; and
- Commencement Bay.

During modeling, flow boundary conditions for the White River, Lake Tapps tailrace, and Puyallup River above the confluence were all based on gage records for model calibration and the output from the Systems Model for scenario evaluation. The daily average Lake Tapps tailrace flows from the Systems Model were disaggregated to hourly flows using a custom utility program based on hydropower operations. The hourly flows simulate the on-off operations of hydropower peaking including ramping rates of the Temporary Stay (April 27, 2001) of the FERC license. For the White River and Puyallup River above the confluence, the hourly flows were set equal to the daily average flow.

Flows in Clarks Creek were estimated from USGS gage records. Gage records were not available for Clear Creek, so its flow was estimated based on a correlation to Clarks Creek developed from prior overlapping periods of record. Flows for the NPDES discharges were based on Discharge Monitoring Reports (DMR) or the Puyallup River TMDL, if DMRs were not available. The model also requires a head boundary condition for Commencement Bay to simulate tidal effects on the lower reaches of the Puyallup River. Hourly head data were obtained from the Commencement Bay station of the NOAA National Water Level Observation Network.

Water quality boundary conditions for White River and Lake Tapps tailrace are the most critical for development of the model. These locations had the most complete data sets available for developing boundary conditions. The remaining boundary conditions relied heavily on the monitoring and assumptions of the 1993 Puyallup River TMDL and DMRs, with the exception of Commencement Bay where more recent data were available.

A primary limitation of the water quality model is that the water quality monitoring data used for boundary conditions in the White River and the tailrace release may not represent worst case conditions and do not incorporate potential changes caused by the Baseline condition or WSP.

The boundary conditions were developed primarily from the 2001 data because it was the only year that high frequency monitoring data were available for each of the major boundary conditions. Additional data from earlier years were used to fill in missing data as necessary, particularly for the upstream Puyallup River and Commencement Bay boundary conditions. The 2001 data may not include the worst case conditions. For example, in summer of 2000 temperatures in the tailrace release were several degrees higher than those in the 2001 data (TM 25 Figure 5-7). Ideally, the water quality model would be run over multiple years that include different water quality conditions. However, this was not feasible given the time frame of the preliminary permit and the lack of high frequency data sets from prior years. The impacts of using only one year of data affect both the Baseline and with WSP scenarios.

The monitoring data were collected in 2000 and 2001 during operations that were not the same as those assumed for the Baseline condition. Most notably the Bypass Reach flows would be higher under any of the three MIF scenarios in the Baseline than the flows that occurred during the monitoring period. Higher flows would likely result in improved water quality (e.g., lower pH and lower temperature) in the Bypass Reach. This impacts the accuracy of the model predictions, but not the relative difference between with and without WSP scenarios.

Any changes in water quality released from Lake Tapps as a result of the WSP were also not simulated. The same boundary conditions for water quality are applied to both with and without WSP scenarios, so the differences in water quality are driven purely by changes in boundary condition flows from the tailrace. However, the differences are expected to be minor because Lake Tapps would generally operate in a similar manner, and the detention time and lake levels would not change significantly.

4) Parameter Optimization

The model was calibrated using the technique of parameter optimization, which uses all data available in a continuous feedback loop to optimize the fit with observed data. This approach is well-suited for models with limited observed data to calibrate to and a high number of parameters available for calibration.

Generally, the quality of model calibration for a parameter corresponds to the amount of calibration data available for the parameter. Hydrodynamics and temperature were the best calibrated parameters, as the model was able to reproduce both magnitudes and trends. Dissolved oxygen and salinity were also well-simulated, though in both cases there were deviations in trend and magnitude. pH was not as well-simulated, particularly in the lower White River. Trends in pH were reproduced; however, the magnitude was inconsistently predicted. Part of the difficulty in the pH simulation was the lack of monitoring data for a key parameter, total inorganic carbon.

Finally, insufficient data were available for the remaining water quality parameters to evaluate the calibration. For these parameters, the model appears to have produced results in the range of observed values, but no further evaluation could be made. For these parameters, the model results are best interpreted as an indicator of possible effects, but should not be viewed as an accurate means of quantitative prediction.

5) Scenarios Evaluated

The CE-QUAL-W2 model was used to evaluate scenarios representing each combination of the following:

- Withdrawal – with Water Supply and without Water Supply;
- Period of Maximum Demand – Spring and Fall;
- Climate Condition – Normal, Dry and Drought; and
- White River Bypass Reach MIFs – Agency 10j and FERC 2494.

The applicant also simulated the preliminary draft NMFS Biological Opinion White River MIFs for the fall demand, drought, with and without WSP scenarios, bringing the total number of scenarios evaluated to 26. Climate conditions were selected according to 7-day low flow.

The only differences between the scenarios were the flow boundary conditions for the White River at RM 5.6 and the Lake Tapps tailrace release, and the temperature and DO boundary conditions for the tailrace. Temperature and DO boundary conditions for the tailrace were created based on monthly averages for periods with and without hydropower generation. This allowed the tailrace water quality to correspond to the release of water in each scenario, while still being based on observed results.

6) Tailrace Barrier Dam

A proposed tailrace barrier dam, as described in the article 408 of the proposed FERC license, was included in the water quality model. The main purpose of the tailrace barrier dam is to prevent salmon from entering the tailrace canal and reduce attraction and holding caused by the high flows of the tailrace. A secondary benefit would be aeration from flow over the 11-foot barrier dam. As DO concentrations below the state water quality standard were observed on multiple occasions in the tailrace, accurate simulation of the aeration benefit is crucial for evaluation of the impacts of the project. The dam and its aeration benefits were included in the simulation of each of the scenarios evaluated.

Dam aeration was predicted using the Butts and Evans (1983) equation. The Butts and Evans equation includes two parameters that may be interpreted subjectively—a general interpretation of water quality and the dam aeration coefficient. The general interpretation of water quality is based on work by Gameson (1957) studying 44 weirs in Great Britain. To be conservative, the applicant used a value corresponding to slightly to moderately polluted water (described by Gameson as water "containing a proportion of sewage effluent"). The aeration coefficient selected by the applicant is similarly conservative and is based on physical monitoring results of similar dams. Butts and Evans

monitored aeration at 54 low head dams in Illinois to develop suggested aeration coefficients based on dam geometry. The recommended aeration coefficients ranged from 0.6 to 0.9 for broad-crested weirs. The applicant selected an aeration coefficient of 0.45, which is among the lowest measured values for broad-crested weirs.

(v) 3.8.3.5 Results of Water Quality Analyses

1) Potential Effects of the WSP on White River – Bypass Reach

The WSP would not have detrimental impacts to the Bypass Reach because; (1) the Bypass Reach flows would increase as a result of higher White River Bypass Reach MIFs, and (2) no changes are proposed to the diversion structure specifically for the WSP. Replacement of the diversion dam has been proposed as a component of the FERC relicensing and thus this was included in the flow modeling. Any water quality impacts of the replacement diversion dam were not considered in this analysis, however, it is assumed that these impacts would be evaluated during permitting for the replacement diversion dam.

The FAP associated with the WSP includes maintaining a flow of 250 cfs in the Bypass Reach from February through April. This flow would be expected to improve the pH problems in the Bypass Reach attributed to periphyton growth. These flows would help to reduce nutrient concentrations in the Bypass Reach, primarily through dilution. The benefits of these flows are evaluated in a separate section following the discussion of model results.

2) Potential Effects of the WSP on the Lower White River

The WSP impacts, as modeled with CE-QUAL-W2, can be generally summarized by observing that Lake Tapps releases on average would have lower DO, higher temperature, and lower pH than those of the upstream White River. Reducing the tailrace withdrawal to accommodate the water supply would change the ratio of Lake Tapps water to Bypass Reach water in the lower White River. Thus, a reduction in flow from Lake Tapps would result in higher DO, lower temperature, and higher pH for the White River downstream of the tailrace, resulting in slightly improved water quality. The following table summarizes the expected impacts on the water quality parameters of greatest concern in the lower White River. The 'Operations Period' column refers to descriptions defined in the Section 3.8.1.3.

Table 6. Predicted General Effects of WSP on Lower White River Relative to Baseline Conditions

Operations Period	Effect of WSP Relative to Baseline			
	Flow	Dissolved Oxygen	pH	Temperature
Regular	Lower	Higher	Higher	Lower
Flow Augmentation	No Change to Higher	No Change to Lower	No Change to Lower	No Change to Higher
Post-Augmentation	Lower	Higher	Higher	Lower

There was little discernible difference in the expected impacts of the WSP between Normal, Dry, and Drought years, in part because the boundary conditions did not change between these scenarios. The water quality impacts are most appropriately categorized by the operations periods over the course of a year as shown in Table 6. For this reason, the results for Normal, Dry, and Drought years are generalized in the discussion below.

The expected water quality changes associated with regular operations were relatively constant from day to day. During flow augmentation the magnitude of changes in water quality varied, but the durations of the changes were typically short (less than one week). The greatest changes in water quality occurred during periods immediately following flow augmentation (referred to as 'post-augmentation'). During these periods, releases from Lake Tapps were reduced to recover the water released during the previous period of flow augmentation. The reduction in releases would vary as it is dependent on many factors (e.g., White River flows, Puyallup River MIFs, reservoir rule curve, etc.). The varying reduction in post-augmentation releases results in a varying magnitude of change in water quality.

In general, the change from the daily to hourly FAP would decrease the already small magnitude of the water quality impacts occurring during the periods of flow augmentation. The magnitude of water quality changes would be reduced because with the hourly plan avoidance water would be metered out throughout the day. Thus, even though the volume of water released is generally the same as Baseline, the ratio of augmentation releases from Lake Tapps to flow in the White River Bypass Reach would be lower so the magnitude of water quality change would be lower. However, the duration of these changes, in terms of hours affected within a day, would be longer because the avoidance water is metered out throughout the day. This qualitative summary holds for each of the parameters discussed below.

pH. Modeling results indicate that the WSP on an annual average basis would likely have almost no effect on pH in the lower White River [TM 25 Tables 6-8(c), 6-9(c), and 6-10(c)]. However, there were slight differences on a daily basis (Appendix G) that fit the pattern of the TM Table 6. The magnitude of changes in pH during regular operations was less than 0.05 unit. During post-augmentation, the pH might be expected to increase by up to 0.1 unit.

The changes in pH were small enough in magnitude to be neither detrimental nor beneficial. No violations of state water quality standards, with or without the WSP, were predicted downstream of the tailrace.

Temperature. Modeling results on an annual average basis suggest that temperature in the lower White River would decrease marginally (0.15 to 0.2 °C), as shown in TM 25 Tables 6-8(a), 6-9(a) and 6-10(a). During regular operations, temperature in the lower White River would decrease slightly (less than 0.2 °C). During flow augmentation, the increases in temperature ranged from barely present (Figure 2, HDR 2002b) to around 0.2 °C [TM 25 Figure G-3(a)]. During post-augmentation, temperature typically decreased by 0.5 °C with peak decreases of 1 °C or more. Temperature impacts were similar between the Fall and Spring Maximum Demand scenarios, though flow augmentation and its water quality effects occurred much less frequently during Spring.

Overall, the changes in temperature were small, but beneficial. According to the model, the temperature decreases typically affected the daily maximum (TM 25 Appendix I), and the temperature increases were more likely to affect the daily minimum. However, the highest temperatures of the year were typically not affected by the proposed WSP as these usually occurred during low flow periods when flow augmentation was active. The benefit of lower temperatures during the post-augmentation period might be offset by the other effects of lower flows.

DO. On an annual average, the model predicted that the DO concentrations in the lower White River would increase marginally (0.06 to 0.08 mg/L) as shown in TM 25 Tables 6-8(a), 6-9(a) and 6-10(a). During regular operations, DO would increase by approximately 0.1 mg/L. During flow augmentation, DO would decrease by up to 0.2 mg/L for short periods of time (less than 5 days).

Post-augmentation, daily average DO might increase by up to 0.5 mg/L [Figure 3 HDR 2002b and Figures G-2(a) and G-5(a)].

The expected changes in DO were more significant, and more beneficial, than those of temperature or pH. Increases in DO typically affected the daily minimum (Figure 3 and Appendix I) more than the maximum. As with temperature, however, the benefits of higher DO during the post-augmentation period would be perhaps offset by the other effects of lower flow.

Other Parameters. There was little change in the annual average values of the other parameters studied including: soluble reactive phosphorus (SRP), biological oxygen demand (BOD), fecal coliforms, ammonia, and nitrate+nitrite. More detailed results for these parameters were not presented; however, the results can be generally anticipated based on the data in Table 6. Concentrations of SRP, fecal coliforms, ammonia, and nitrate+nitrite are on average lower in Lake Tapps than the upstream White River (TM 19 Table 2-4). The WSP would likely affect these parameters in a pattern similar to DO. The magnitude of the changes would vary by parameter, however, and would likely be quite small given the negligible differences in mean annual concentrations with and without the project.

There was no difference during monitoring in BOD concentrations from Lake Tapps and the upstream White River (TM 19 Table 2-4). Consequently, the WSP can reasonably be expected to cause no changes in downstream BOD.

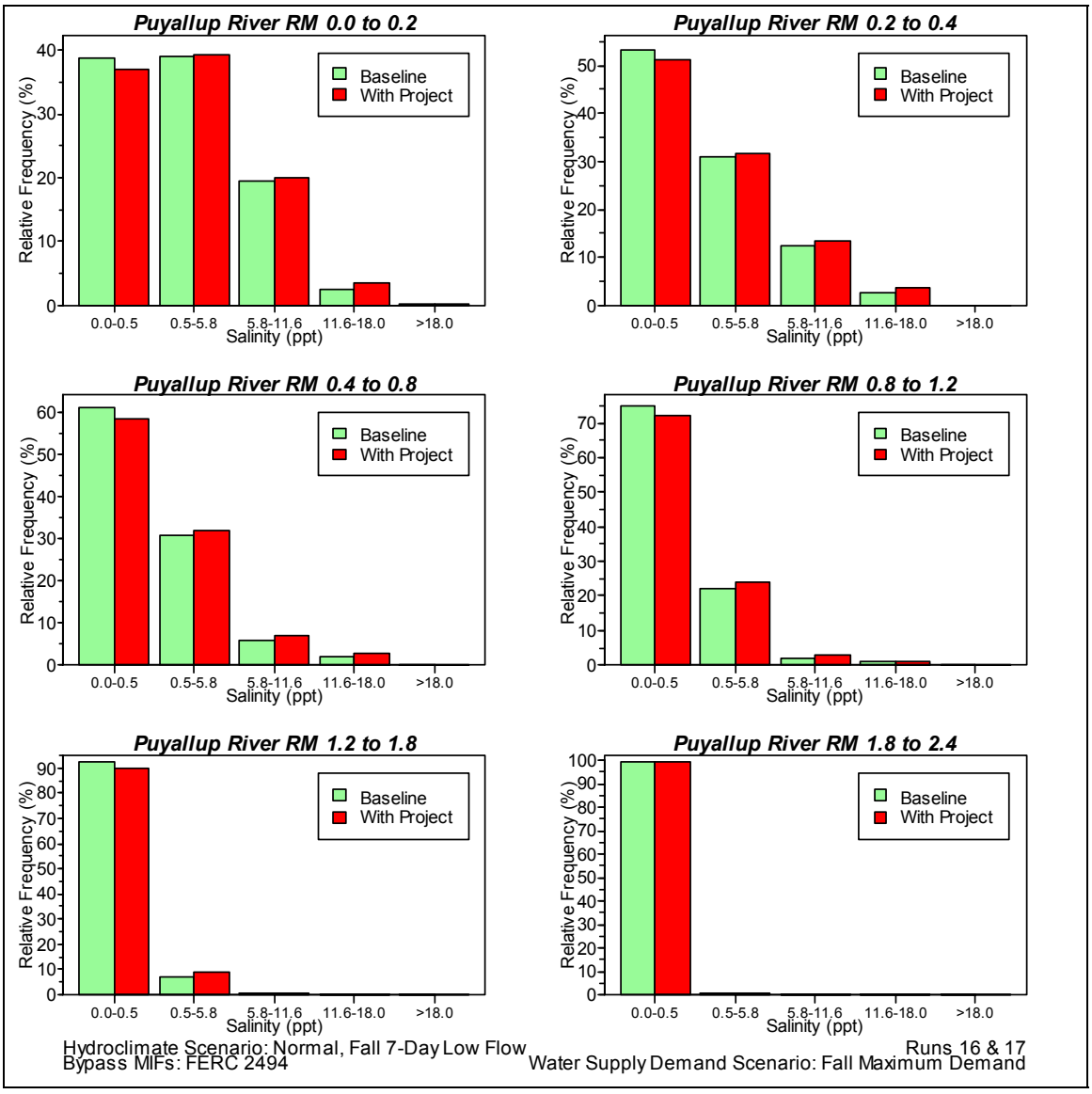
3) Potential Effects of the WSP on the Puyallup River

The effects on the lower Puyallup River would follow a similar pattern to those described above for the White River, but would be reduced in magnitude because the lower Puyallup River also receives flow from the upper Puyallup River and other tributaries. These effects also would be muted by advection, dispersion, and other instream processes (e.g., aeration, algal growth, and respiration). With the notable exception of salinity in the lowest reaches of the Puyallup River, the predicted impact of the WSP on water quality generally decreased with distance downstream from the Lake Tapps tailrace.

As discussed for water quality in the White River, the changes made to the FAP after completion of modeling work would result in minor differences in water quality from the modeling results. The duration of water quality impact during augmentation would be longer in terms of hours within a day, but the magnitude of the impacts would be reduced.

Salinity. In assessing the effect of the WSP on lower Puyallup River salinity, it is important to note that the Commencement Bay water quality boundary conditions are not well-established. The model results for salinity are better interpreted as an indicator of what may occur rather than a quantitative evaluation of impacts.

Salinity in the tidally influenced reach of the lower Puyallup would be affected by the WSP. The flow of fresh water into Commencement Bay would be reduced by 100 cfs on average, which would allow the salt water wedge to advance further upstream in the Puyallup. Figures 6-11 (included below) and 6-12 in TM 25 evaluate the relative frequency of occurrence of expected higher salinity water for six segments representing RM 0.0 to 2.4.



TM 26 Figure 6-11. Relative frequencies of volume-averaged salinity for the period 1-June through 30-September for the normal hydroclimate scenario and the fall maximum water supply demand

The salinity evaluation in TM 25 uses categories roughly corresponding to those in Table 7.

Table 7. Categories for Describing Estuarine and Marine Environments Based on Salinity (after McLusky 1993)

Category	Description	Salinity in parts per thousand
Limnetic	Freshwater	0 to 0.5
Oligohaline	Slightly Brackish	0.5 to 5
Mesohaline	Moderately Brackish	5 to 18
Polyhaline	Brackish	18 to 30

Above Puyallup River RM 1.8, the project would be expected to have no effect on salinity. Below RM 1.8, limnetic or freshwater conditions would occur roughly 3 percent less frequently than without the WSP. In the lowest reaches (RM 0.0 to 0.6), the frequency of mesohaline conditions would increase by roughly the same amount (3 percent). Oligohaline conditions would remain the same or increase slightly. Further upstream, mesohaline conditions would occur less frequently and the dominant impact of WSP would be a shift from limnetic to oligohaline conditions. There would be no expected change in the frequency of polyhaline conditions, which seldom occur above RM 0.2.

pH, Temperature, and DO. Based on modeling results, the pH, temperature, and DO impacts of the WSP on the lower Puyallup River would be less pronounced than the impacts in the White River. The impact of the WSP decreases further downstream as the Puyallup River receives additional flow from other sources such as the mainstem Puyallup River and tributaries. The average pH would remain essentially unchanged and average temperature would decrease by 0.12 to 0.19 °C. Average DO would increase by 0.05 to 0.08, except in the lowest reach of the Puyallup River where the increase in DO from reduced Lake Tapps flow would be offset by a greater presence of lower DO salt water. In the lowest reach of the Puyallup River, the average DO would remain essentially unchanged.

The timing of impacts in the reaches of the Puyallup River would be similar to that of the White River, but modified slightly by instream physical (e.g., advection and dispersion), chemical (e.g., carbonate cycle) and biological (e.g., algal growth and respiration) processes.

Post-augmentation, the WSP would result in periods of higher DO and lower temperature. Otherwise, there would little discernible impact from the WSP in any of the scenarios evaluated.

Other Parameters. Based on annual average results, the modeling predicts that there would be little or no change in the other parameters studied as a result of the WSP.

4) Potential Effects of the WSP on Downstream NPDES Permit Holders

The project would have no negative impacts on downstream NPDES permit holders. Many NPDES permits are developed based on the 7Q10 and 7Q20 flows. These flows would increase as a result of the higher White River Bypass Reach MIFs (TM 25). Because the WSP results in no change in the 7Q10 and 7Q20 flows, and those flows are increased because of the higher White River Bypass Reach MIFs, the project would not affect the allowable pollutant loads or mixing zones of downstream NPDES Permit Holders. This analysis is valid for each of the three sets of proposed Bypass Reach MIFs.

As described in TM 5, there would be no wastewater discharge from the water treatment facility associated with the WSP, thus the facility would not need an NPDES permit. The proposed treatment train includes two waste side streams: rejection water from membrane filtration and filter backwash

from the granular activated carbon (GAC) filters, if GAC filters are implemented. Both of these waste streams would be thickened/dewatered to remove solids. Water recovered from this process would be recycled to the start of the treatment train.

5) Potential Effects of the WSP on the Puyallup River TMDL and Waste Load Allocation

The Puyallup River TMDL for BOD_5, ammonia, and residual chlorine was approved in 1994 with Waste Load Allocations (WLA) for municipal and industrial dischargers. QUAL2E modeling at the time indicated that the river had additional reserve capacity to oxygen demanding discharges before DO concentrations would be reduced to the water quality standard of 8.0 mg/L. A reserve WLA was calculated allocating portions of the reserve capacity to different dischargers. The reserve WLA was calculated based on model predictions of a critical DO concentration of 8.51 mg/L at Puyallup River RM1.0. In December 2000, Ecology placed a moratorium on allocations of the reserve WLA as a result of measured DO concentrations below the state water quality standards.

The applicant repeated Ecology's QUAL2E modeling, changing only the extent of the model and using the 7Q20 flows that would occur with the WSP (as calculated with the Lake Tapps Systems Model [TM 25, pg 22]). Nine scenarios were evaluated, reflecting combinations of the three Bypass Reach MIFs and three demand scenarios. In each scenario, the predicted DO concentrations were higher and ammonia concentrations were lower than those calculated for the 1994 TMDL. Although the applicant did not calculate the critical DO concentration, Figure 4-6 in TM 25 indicates that the critical DO concentration would be similar or slightly higher than the TMDL QUAL2E model result.

Based on higher 7Q20 flows and the results of QUAL2E modeling, the WSP would not negatively impact the Puyallup River TMDL, WLA, or reserve WLA.

6) Benefits of Maintaining White River Bypass Reach at 250 cfs during February through April

This section evaluates the potential benefits from the 250 cfs Bypass Reach minimum flow from February through April that would occur as a component of the WSP. This evaluation is based primarily on work done by EPA, Ecology, and the Muckleshoot Indian Tribe as a component of the ongoing TMDL study regarding pH in the White River. One outcome of the Bypass Reach TMDL study will be new permit limits for the municipalities to limit phosphorus discharges to the White River. Phosphorus stimulates attached algae growth that changes dissolved carbon dioxide (CO_2) concentrations in water. In water, carbon dioxide acts as an acid, and carbon dioxide uptake by algae causes pH to rise above standards. This section describes the existing water quality issues in the bypass reach, then evaluates the potential benefits of the 250 cfs flow using information from the ongoing pH TMDL study.

Existing Water Quality in the Bypass Reach. Within the Bypass Reach of the White River, water quality "did not meet expectations and is of highest concern based on water-year 2002 assessment" (Ecology 2003). Ecology's monthly monitoring data show that the river did not meet water quality standards for fecal coliform, pH, and temperature on several occasions between 1999 and 2002. In addition, the USGS noted dissolved oxygen concentrations below 8 mg/L on a few occasions in a 2-year study of water quality.

Data collected by the United States Geological Survey in 2002 appear to confirm that the White River does not meet standards for temperature and pH (the data are provisional and subject to revision). At River Mile 4.9, the reported maximum daily pH exceeded the pH standard from mid-September to mid-October when the USGS stopped collecting data. The maximum daily temperature also

reportedly exceeded the temperature standard in late August at River Mile 4.9 and 1.8, and again in mid-September at River Mile 1.8 (Ecology 2003b).

Evaluation of the 250 cfs Flow in February, March and April. The proposed increase in the White River to 250 cfs during February through April would have several water quality benefits that are generally tied to increased dilution. Higher flows dilute existing pollution and lower pollutant concentrations in the river, thereby improving water quality. Higher flows also dilute atmospheric inputs of heat and result in cooler river water temperatures.

Ecology also would consider the increase in instream flows when setting future effluent limits for phosphorus discharges from municipal dischargers. Higher flows would result in greater dilution and the greater dilution would allow Ecology to set higher effluent limits.

Based upon analysis conducted to date, Ecology expects that the White River would meet standards for pH if instream phosphorus concentrations were within a range of 20 to 30 µg/L. The best current estimate of a single target phosphorus level is 24 µg/L as soluble reactive phosphorus (SRP).

The level of treatment needed to meet the phosphorus target will be based upon one of two models. The first model assumes that dischargers can rely on a base level of assimilative capacity in the river while the second model predicts increased assimilative capacity above the base level. Both models assume that non-point sources will be controlled only to a limited extent in the near future and that some load will be reserved for future growth.

The Base Model analysis suggests that a minimum instream flow of 250 cfs and an effluent limit of 100 µg/L as total phosphorus would together bring White River phosphorus levels into the target range (Table 8, included below). A flow of 250 cfs would decrease the predicted river phosphorus concentration and increase the likelihood of meeting pH standards. Without the higher flow, the chances of not meeting standards increase, with a commensurate increase in the possibility that municipalities will have to remove their discharges from the river.

The cost of Enumclaw's treating wastewater to100 µg/L is presently unavailable but O&M costs apparently increase exponentially when treating to below 1,000 µg/L (Esvelt 2003). The current estimated capital cost of expanding the treatment plant and treating to 1,000 µg/L phosphorus is roughly $15 million. An additional $3.8 million in capital costs will be necessary to treat to phosphorus levels below 500 µg/L (Barreca 2003). The estimated cost of removing the discharge from the river is $40 million (Barreca 2003). The base model and cost estimates together suggests that higher White River flows would increase the probability that the ultimate cost of wastewater treatment for the city of Enumclaw would stay within the $16-17 million range, and would not increase to $40 million.

Table 8. Base Model Prediction of Instream Soluble Reactive Phosphorus (SRP) Concentration; *Municipal Effluent Limit = 100 µg/L*

River Flow in cfs	Predicted SRP Concentration in µg/L
145	30
250	27
340	25

The Increased Assimilative Capacity Model is still under development by Ecology. Initial analysis with the model suggests that a minimum instream flow of 250 cfs and an effluent limit of 1000 µg/L would together bring White River phosphorus levels into the target range. At flows below 250 cfs, the City would have to treat to 500 µg/L and might have to treat as low as 100 µg/L. However, Ecology is still developing this model and it is not clear that there would be additional assimilative capacity beyond that predicted in the base model.

(g) 3.8.4 Potential Biological Effects

The following assessment is based on the descriptions of the effects of the proposed WSP on the hydrology and water quality characteristics of the White River and Puyallup River systems described in the previous sections of this ROE. Effects of the WSP are defined as those effects that result from flow and water quality changes to the Baseline. Background information on the fish and aquatic resources of the White and Puyallup Rivers is drawn from TM 26 and from other, readily available sources.

(i) 3.8.4.1 Existing Conditions

Since the early part of the last century, operation of the existing White River Hydropower Project has significantly altered the hydrology of the White River and the lower reaches of the Puyallup River. Over the last century, anadromous salmonid populations (hereafter generalized as "salmonids") indigenous to the system have adapted in varying degrees to these altered conditions. These modified conditions, combined with a few future improvements (e.g., replacement of the diversion dam) associated with the pending FERC license, constitute the Baseline for this examination of the effects of the WSP. The primary impact during the period of White River Hydropower Project operation has been the diversion of water into Lake Tapps and the reduced habitat available in the Bypass Reach (RM 24.3 to RM 3.6) of the White River for salmonid migration, spawning (White River only) and rearing. The 1986 settlement agreement between PSE (then Puget Power) and the Muckleshoot Indian Tribe increased the required minimum flow in the Bypass Reach from 30 to 130 cfs, significantly improving habitat in that reach. Subsequent agreements or regulatory mandates are expected to increase this flow further, particularly during the August through October low flow months. These new minimum Bypass Reach instream flows would be independent of the WSP and were thus not analyzed as part of the effect of the WSP.

Additional impacts have resulted from the nature of flow releases from Lake Tapps through the power generation system. Current hydropower operation results in releases of stored water from Lake Tapps in pulses of up to 2000 cfs for periods of a few to several hours. These releases sharply increase flows in the lower White River, with subsequent sharp decreases in flow when power generation is terminated (TM 26 Figure 5-1, reproduced above). Changes of river stage in the lower Puyallup River of several feet result from these releases. Flow changes are expected to follow prescribed ramping rates to minimize the effects of stranding, although stranding of both juveniles and adult salmon has been experienced in past operations. These major changes in flow rates in the lower

White River carry concomitant effects on the nature, availability, and accessibility of habitat for juvenile salmonids and may also affect the rates and abilities of adult salmon to migrate upstream. Flow fluctuations in the Puyallup River resulting from existing operations are similar in nature, but of much less severe magnitude, since they are superimposed on the much higher natural flow of the Puyallup River at the point of confluence with the White River (TM 26 Figure 5-1). It must be emphasized that these conditions represent the Baseline and are not the result of the WSP.

The Puyallup/White River system supports up to eight species of salmonid fishes and has significant anadromous runs of chinook, coho, pink, and chum salmon as well as steelhead and cutthroat trout. Native char (bull trout and/or Dolly Varden) are also reported in upper reaches of both rivers but very few char have been captured in extensive beach seining in Commencement Bay (PIE 1998), indicating that few if any char move through lower river areas that would be affected by the WSP.

Adult salmonids use habitats in the lower Puyallup River and in the lower White River for upstream migration, including holding during those migrations. The channelized low-gradient nature of both reaches limits the amount of spawning. Any spawning that does occur would be subjected to the daily flow fluctuations of the existing conditions.

Juvenile salmonids use the lower Puyallup River, the Bypass Reach, and the lower White River for downstream migration and rearing, as well as making the osmoregulatory adjustment necessary for life in salt water. Fluctuations in flow rates and hence in flow velocities resulting from existing operations, may alter the rates of downstream movement of juvenile salmonids. Fluctuations in flow also change river stage (water surface elevation) which changes the amount of stream margin or off-channel habitat that may be available for juvenile holding and rearing in freshwater and estuarine portions of the lower rivers.

(ii) 3.8.4.2 Summary of Hydrologic and Water Quality Changes with WSP

As described in the applicant's technical memoranda (particularly TM 16, TM 25, and TM 26) and summarized in the preceding section, the proposed WSP would result in the following changes to Baseline habitat conditions in the Lower White River (lower 3.6 miles):

- The magnitude and/or duration of peaks during power generation would be reduced (TM 26 Figure 5-1). Under the maximum demand scenario evaluated by the applicant, average flow would be reduced by 150 cfs during the peak use, late summer-early fall period, and by 83.3 cfs during the remainder of the year.

- No reduction in daily average flows would occur during periods when the Puyallup River is below the MIF. (With the possible exception related to maximum spring refill rates as described in item 8 in the "Limitations of Hydrologic Analyses" subsection of 3.8.1.2 above.) Flows below the MIF during non-generation hours would increase as a result of avoidance water releases.

- Reduced daily average flows would occur during the post-augmentation period, as the reservoir would be refilled to meet the minimum hydropower generation rule curve (see Section 3.8.1.3 for explanation).

- Increases in the 10- and 20-year, 7-day low flows would result from increased Bypass Reach MIFs.

- Minor changes in water temperature (generally decreases in peak temperatures) and dissolved oxygen (generally increases in minimum dissolved oxygen) would occur.

As described in the applicant's technical memoranda (particularly TM 16 and TM 26) and summarized in the preceding section, the proposed WSP would result in the following changes to existing (Baseline) habitat conditions in the Lower Puyallup River (lower 10.4 miles):

- Flow changes similar to, but of lesser relative magnitude than those described for the lower White River.

- Reduced number and magnitude of MIF excursions (based on hourly average flows).

- Negligible changes in water temperature (generally decreases in peak temperatures) and dissolved oxygen (generally increases in minimum dissolved oxygen).

- Slight increase in upstream penetration of saline waters from Commencement Bay into the mouth of the Puyallup River due to reductions in volume of freshwater discharge.

It should be noted that while changes in temperature and oxygen, on average, would be favorable to salmonids, during periods of flow augmentation, temperature would increase slightly and DO would decrease slightly from Baseline as a result of the increased release of water from Lake Tapps.

(iii) 3.8.4.3 Biological Significance

1) Direct Effects of Flow on Aquatic Habitat and Fish

Looking at effects of the WSP on daily average flows, the applicant has adequately assessed the significance of project operation on important anadromous fish resources (TM 26 and HDR 2002b). The net effect of the WSP when viewed on that basis would be expected to be generally small, given that the main impacts of the WSP on downstream flows would be a slight reduction in the peak flow and/or a slight reduction in the duration of those peak flows. Based on daily average modeling results, flow augmentation, coupled with the increased instream flow requirement in the Bypass Reach (increases from May through January not a part of the WSP) would produce a slight increase in the minimum river flows experienced in the lower White and lower Puyallup Rivers, when viewed on a daily average or 10- or 20-year, 7-day low flow basis. A combination of average daily flow modeling and examples from the hourly water quality flow modeling indicates, that the project would not significantly adversely affect the following:

Conditions of Fish in the Bypass Reach. *Basis* – With the exception of maintaining 250 cfs flows in February, March, and April (which are a benefit to fish), there would be no change in the operations of the diversion dam with the WSP. Impacts of replacement of the diversion dam are included in the Baseline and would not be a component of the WSP.

Upstream Migrations of Adult Salmon. *Basis* – The project would affect only the frequency and duration of periods of increased flow resulting from the hydropower peak, not the low flows occurring during non-generation hours. Higher Bypass Reach MIFs resulting from the FERC relicensing project would also increase flows during non-generation hours, but the higher MIFs are not a result of the WSP.

Adult Salmon Spawning and Incubation. *Basis* – Little spawning occurs in affected reaches because of the nature of the river morphology and geomorphology. Any spawning that does occur in affected reaches is already occurring in adverse conditions (e.g., high sand content and embeddedness; high variation between daily flow maxima and minima) that would only be slightly altered by the proposed WSP.

Juvenile Salmonid and Smolt Downstream Migration. *Basis* – The reduction in the frequency and/or duration of high flows during power generation would reduce velocities carrying fish downstream through the lower White River and the lower Puyallup River for a small portion of the day. However, because fish adjust their position within the stream cross section to select for a combination of current and/or proximity to the bank that fits their behavioral preferences on a continual basis, these changes would not be expected to result in a significant change in downstream migration patterns. Higher instream flows in the Bypass Reach during February through April would significantly improve conditions for early outmigration of juvenile salmonids originating in this reach or in the upper White River.

Juvenile Salmonid Stranding Risk. *Basis* – The primary change in flows that would result from the WSP would be a reduction in the duration of the hydropower peak. Such a change would be expected to reduce stranding since there would be less time for fish to reoccupy areas that may be subject to subsequent dewatering. It is presumed that the WSP would operate under prescribed ramping rates (e.g., down-ramping rate of less than 1 inch per hour during daylight hours). Operation with higher down-ramping rates during springtime, with or without the WSP, is likely to result in fry stranding.

Water Quality Conditions Affecting Cold-Water Aquatic Life. *Basis* – Changes in water quality (temperature and DO) would generally be slight and in a direction (lower maximum temperatures and higher minimum DO) that are more favorable for cold water species. However, during flow augmentation for MIF avoidance, increased relative flow from Lake Tapps may slightly increase temperature and decrease DO below the tailrace.

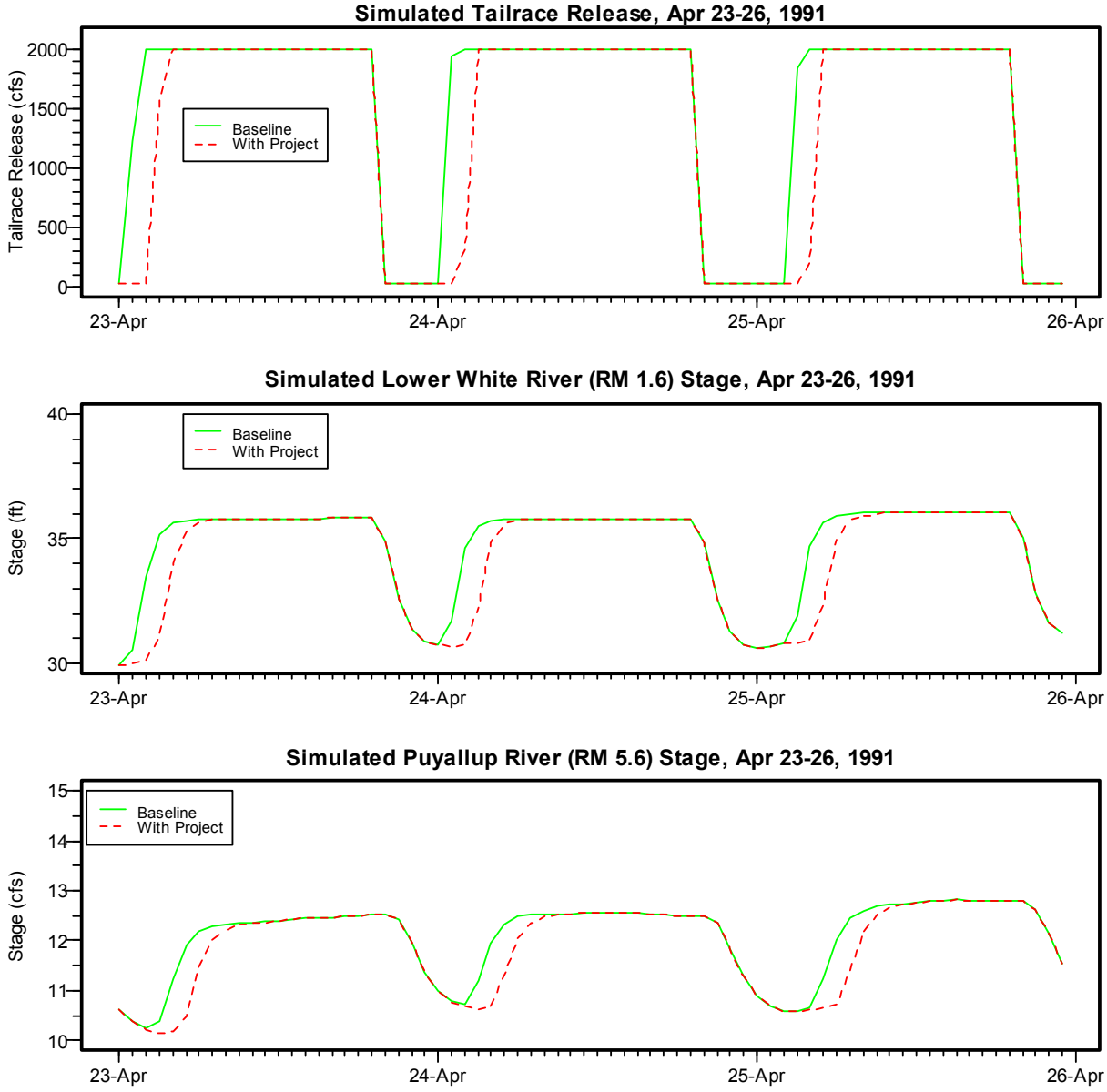
Juvenile Salmonid Vulnerability to Predation. *Basis* – Changes in water quality (temperature and dissolved oxygen) would generally be slight and in a direction (lower maximum temperatures and higher minimum DO) more favorable for salmonid swimming performance and predator evasion. (However, see flow augmentation water quality effects in the previous bullet and off-channel habitat discussion below.) Higher instream flows in the Bypass Reach during February through April would reduce predation risk on juvenile salmonids.

While changes in daily average flows would have minimal and largely insignificant impacts as summarized above, examination of figures depicting shorter-duration (hourly) flows plotted over time periods of a few days (TM 26 Figures 5-1 and 5-2 and HDR 2002b, Figures 6 and 7) suggest potentially more important effects on salmon habitat. These effects, while difficult to quantify, potentially could result in short-term reductions in habitat quality and availability, especially for juvenile salmonids in the lower Puyallup River.

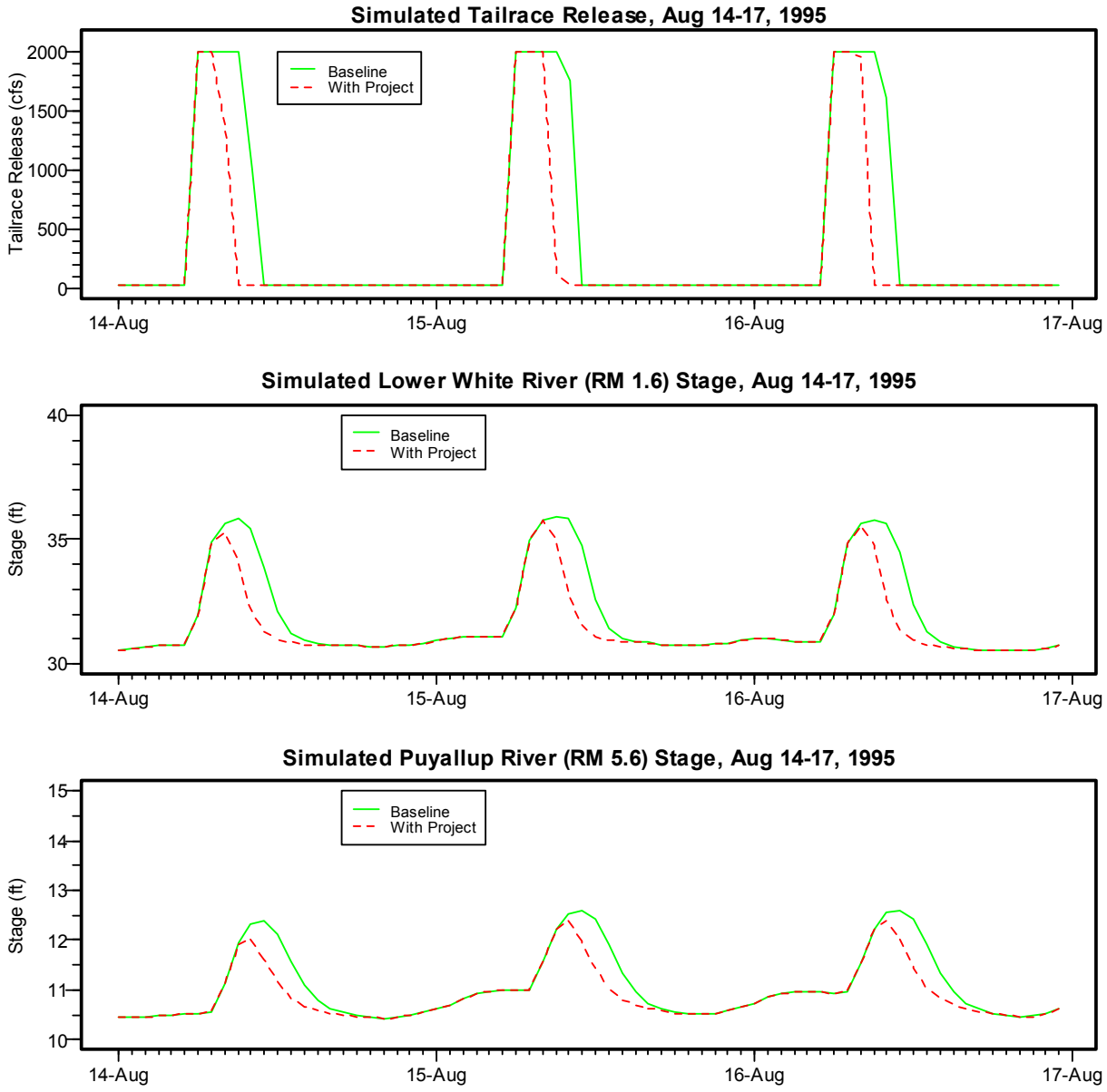
As with other parameters, the impact of the project on stage decreases with distance downstream of the project. Figures 8 through 10 (HDR 2002b) are exceedance curves (apparently based on daily averages) that indicate the portion of time that a given stage would likely be exceeded. In the Lower White River, it is expected that the WSP would primarily reduce the amount of time at higher stages (31 to 34 feet) by 5 percent. This impact would be dampened significantly in the Puyallup River at RM 8.2 and 5.6, but the impact would primarily occur at the higher stages. At RM 2.9, the only visible difference would occur at lower stages (>70 percent exceedance). This result would probably be caused by tidal influence overwhelming the change in stage from proposed WSP except during low tides; hence the only change occurred at the lowest stages.

Ecology requested analysis of the effects of the WSP on water surface elevation (stage) in lower river areas (e.g., Gog-li-hi-te; Clear Creek) where attempts are ongoing to re-create off-channel habitat areas for use by juvenile salmonids during their outmigration periods which can span from early spring through late summer (TM 26, Table 4-1). The applicant provided example graphs of hourly

river flow and stage during spring and summer periods that are useful in this analysis (HDR 2002b Figures 7 and 6, respectively) and are included below.



HDR 2002b Figure 7. Simulated tailrace canal release and downstream stage for normal spring flow conditions, FERC 2494 MIFs, and spring maximum water supply demand



HDR 2002b Figure 6. Simulated tailrace canal release and downstream stage for normal fall low flow conditions, FERC 2494 MIFs, and fall maximum water supply demand

Because of the reduced period of power generation that would result from the WSP diversions, Figures 6 and 7 (HDR 2002b, included above) show a reduced duration of higher flows reaching the lower Puyallup River. The net effect is a reduced time interval during which stage in the river (Puyallup RM 5.6) would be at higher elevations. The figures indicate a period of approximately 2 hours in each example day when the stage is expected to be substantially lower with the WSP than without. The applicants correctly note that lower in the river (e.g., RM 0 to 2), where the existing restoration projects have been constructed, tidal influence would be moderate and complicate these predictions such that differences between existing and post-project stage would be less. It also should be noted that alternately the WSP could result in a reduced magnitude in the hydropower peak or some combination of reduced magnitude and duration.

Off-channel habitat restoration in the lower Puyallup River has been deemed of the utmost importance to the recovery of salmon runs in the system (Simenstad 2000). The applicant correctly predicts that, "…to the extent that juvenile salmonid access to side-channel areas is dependent on higher flows, there could be some reduction in the duration or time this side-channel habitat could be used…"(TM 26 pg. 44). It is expected that most existing and most new constructed off-channel habitat would be accessible over a wide range of flows and that access into the habitat areas would not be a significant problem.

A potentially more significant effect of projected stage changes in the lower river would be that off-channel habitats would have somewhat less usable habitat area for a period of about 2 hours each day during the spring and summer outmigrations. For example, in an off-channel marsh habitat with relatively moderate (e.g., 10H:1V) side slopes, a change of 1 foot in elevation would dewater 10 feet of shoreline, thus making that area unusable for juvenile salmonids for a period of up to 2 hours a day more than under the present conditions (based upon a simple calculation, in a hypothetical, circular 1-acre off-channel habitat area with 10H:1V side slopes, reducing the wetted radius by 10 feet would reduce wetted habitat area by about 15 percent.) This suggests that there could be a significant short-term reduction in usable habitat area in lower river off-channel habitat areas. This effect would be most significant in off-channel areas farther upstream and closer to the mouth of the White River or in the White River itself.

2) Potential Project Effects on Lower Puyallup River Salinities

The applicant has modeled the effect of the WSP operation and the concomitant reduced flow volumes on salinity intrusion into the mouth of the Puyallup River. The model results (TM 26, Figures 5-3 and 5-4) indicate a small increase in frequency of higher salinity conditions upstream to about RM 1.8. Up to RM 0.2, the greatest increase in frequency would be expected for higher salinities (11 to 18 parts per thousand (ppt) range). At increasing distances upstream, these higher salinity differentials are eventually reduced to insignificant.

These results suggest, in effect, that the reduced freshwater inflow would cause estuarine conditions to extend farther upstream into the mouth of the Puyallup River. In the larger ecosystem of Commencement Bay, a major piece of habitat that has been removed by industrial development is low-salinity habitat (e.g., with salinities generally less than 5 ppt) with fringing brackish marsh. Under present conditions, the Puyallup River flow is jetting from its mouth in a surface plume that does not support typical estuarine functions of gradually increasing salinity regimes in shallow water marsh and mudflat habitats. Based on the analyses presented by the applicant, removal of the additional fresh water by the WSP could expand the potential for this critical habitat. This could increase the habitat function provided along the river margin and the habitat benefits of existing and future restoration projects in the lower river.

3) Expected Effectiveness of the Flow Augmentation Plan

The avoidance water element of the FAP would increase releases from Lake Tapps continuously throughout periods of anticipated MIF excursion in the lower Puyallup River. This additional flow would augment low flows in the lower reaches of the Puyallup River and would reduce the number and magnitude of MIF excursions. It can be expected that greatest stress to juvenile salmonids would be during periods of minimum river flow when accessible habitat area would be at a minimum. The proposed FAP would increase minimum daily flows by up to 15 percent with a proportionally reduced impact on instream and off-channel habitat as described above. The FAP also will reduce hydropower releases to the lower White and Puyallup Rivers both in magnitude or duration, thus causing lesser diurnal flow fluctuations than under Baseline Conditions.

Although the FAP may result in marginally reduced water quality (because of the increased proportion of Lake Tapps water to White River and Puyallup River water), any adverse effects on fish from the small increases in temperature and decreases in DO would be more than offset by the benefits of increased habitat area that would result from avoidance water releases.

4) Potential Effects on Habitat Forming Processes

The applicant (TM 26) describes the potential impact of the WSP on several of the flow-dependent riverine ecosystem habitat forming processes. The general conclusion stated is that, because the frequency and intensity of high flow events that result from power generation would not be greatly altered by the WSP, there would be little change in flow-dependent riverine processes such as sediment and large woody debris (LWD) transport or in the rates of change in channel morphology that are largely dependent on high flows. In most systems, it is a valid assumption that winter and spring floods are responsible for a large portion of sediment and LWD transport, but the applicant presents few data supporting this assumption for the system in question.

The applicant does not point out the fact that the most important aspect of flow influenced by the WSP, i.e., the potential change in duration of high flows, is highly important in all of these processes. This leaves uncertainty regarding the influence on habitat forming processes of having the 2,000 cfs release from the project added to flood flow in the lower White River for 2 hours less during a peak flow event. Also, the process of sediment transport, at least, continues during non-flood events, and the reduced duration of higher flows that would result from WSP operation could change (reduce) the rates of that transport somewhat. While detailed analyses have not been conducted, it is probable that the reduction in the duration of peak power generation flows resulting from the WSP would not have a significant effect on sediment transport or habitat forming processes in the channelized lower White and Puyallup Rivers. This conclusion can be justified based on the relative peak flows in each river with and without a 2,000 cfs release from the project, the small proportion of time during a flood event when that release would be curtailed by the proposed project, and the channelized nature of the affected reaches that constrains natural habitat forming processes.

5) Potential Effects of Increased Instream Flows in the Bypass Reach

As part of the WSP, the applicant would maintain 250 cfs flows in the Bypass Reach during February through April. Although below the agency 10j recommendations to FERC, the 250 cfs flows would match those required by NMFS in the BiOp (see Table 1). The incentive for this action is the finding of elevated pH in the Bypass Reach in the daytime during periods of low flow. Data presented by NMFS (2002) show a high incidence of exceedances of the pH criterion of 8.5 during periods when bypass flow is 250 cfs or less. The cause of these pH excursions has been identified as a high rate of periphytic photosynthesis stimulated by nutrients released from municipal treatment facilities. During late winter and early spring, before glacial melt water reduces White River transparency, photosynthesis consumes carbon dioxide driving the pH up. Reduced light in the evening allows respiration to replenish carbon dioxide levels, reducing pH to acceptable levels. The correlation of increased pH with lower flows suggests that higher flows dilute nutrient levels maintaining pH within an acceptable range.

Levels of pH in excess of the 8.5 criterion are considered to be suboptimal for salmonids although direct data relating elevated pH to salmon health are lacking. Because the incidence of elevated pH is high during the late winter – early spring period when developing salmon embryos, alevins, and fry may be especially vulnerable to high pH, higher flows during the February through April period may reduce the potential for adverse effects. Higher flows during that period will also expand instream habitat area available for newly emerged fry and yearling smolts to rear and improve conditions for

downstream migration. Thus, increasing flows in the Bypass Reach during the February through April period is expected to have a significant positive effect on salmonid habitat in the Bypass Reach.

6) Potential Effects of Out-of-Basin Transfers

Source exchange has been proposed by the applicant as an approach to benefit fisheries in Central Puget Sound watersheds other than the Puyallup-White, by replacing existing water sources that directly impact salmon critical streams with water from the Lake Tapps water supply project. The applicant has cited the City of Kent's current voluntary releases (non-diversion by a senior water right) to Clarks Creek, and Covington's current peak day withdrawal of over 13.0 mgd from wells in the Soos Creek Basin, as examples of the order of magnitude that the source exchange program could have. The applicant has stated that specific source exchange scenarios are difficult to quantify at this stage. Specific agreements are not yet in place to target areas of need. There are, however, numerous areas that WDFW has identified where low flow issues did arise during the 2001 drought.

ARTICLE VI. 4.0 FOUR PART TEST

To approve these applications, Ecology must find each of the following four requirements of RCW 90.03.290 have been satisfied:

(1) Water is available for appropriation;
(2) The proposed used would be a beneficial use;
(3) The proposed appropriation would not impair existing water rights; and
(4) The proposed appropriation would not be detrimental to the public interest.

Section 6.01 4.1 Availability of Water

In March 1980, Ecology promulgated rules that set forth the provisions for future allocation of water from the Puyallup River Basin (Chapter 173-510 WAC). The stated purpose of the rules is to:

> Retain perennial rivers, stream, and lakes in the Puyallup River basin within stream flows and levels necessary to provide protection for wildlife, fish, scenic-aesthetic, environmental values, recreation, navigation, and to preserve high quality standards (WAC 173-510-020).

Relevant to this application are the provisions in the rule that close the White River and all tributaries "to further consumptive appropriations." WAC 173-510-040(3). The rules also establish specific instream flows on the lower Puyallup River which is defined as "[from the influence of the mean annual high tide at low base flow levels to the confluence with the White River." WAC 173-510-030(1). The specific instream flows for the lower Puyallup River are provided for in WAC 173-510-030(2). These flows range from 1,000 cfs in the fall to 2,000 cfs in May to July.

The applicant has proposed to use water for municipal supply purposes in a manner that would not impair the minimum flows for the lower Puyallup River. However, the applicant's proposed use of water would impact the lower White River from the tailrace of PSE hydropower plant to the confluence with the Puyallup River. Under Chapter 173-510 WAC, this portion of the river is closed from further consumptive appropriations. Stream "closures" are not minimum instream flows constituting appropriations under RCW 90.03.345. Rather they are determinations by the Department that water is not *available* for further appropriations. See Postema v. PCHB, 142 Wn.2d 68, 95, 11 P.2d 726 (2000).

However, the finding of unavailability based at least in part upon a stream closure under the authority of RCW 90.54.020(3)(a) may in certain circumstances be overridden. That section states that a new appropriation from a closed stream may be authorized:

> "in situations where it is clear that overriding considerations of the public interest [hereinafter "OCPI"] will be served."

In making a statutory determination of OCPI under RCW 90.54.020(2)(a), Ecology uses a three step analysis:

1. Ecology determines whether and to what extent important public interests would be served by the proposed appropriation. The public interests served may include benefits to the community at large as well as benefits to the river or other environmental resources.

2. Ecology assesses whether and to what extent the proposed appropriation would harm any of the public interests (fish, wildlife, scenic, aesthetic, and other environmental and navigational values) protected by the closure and/or any other public interests.

3. Ecology determines whether the public interests served (as determined in step 1) clearly override any harm to the system protected by the closure (as determined in step 2).

The following section of this report presents Ecology's three-step OCPI analysis:

Step 1: Analysis of Public Interests Potentially Benefited by the WSP

- **Public Water Supply Benefits.** The WSP would provide a significant source of public water supply for addressing future needs of customers and businesses served by the cities and water utilities that comprise the CWA. Further, because of its scale and the central location of the contemplated transmission system, the WSP would provide a potential source to meet other public water supply needs within the Central Puget Sound region and thereby increase reliability of meeting future demands. Providing reliable public water supplies that meet the needs of population and economic growth is an important state policy recognized in RCW 90.54.010 & 020. As discussed above, the supply and demand analysis predicts that without the Lake Tapps supply CWA members would have an average unmet demand of 27.5 mgd by 2034 and of 54.2 mgd by 2053. The level of unmet demand would increase if other utilities use project water to address future needs.

- **Improved Flows in Flow-Impaired Streams in Watersheds Where Lake Tapps Water Would Be Used.** The WSP commits to a Source Exchange Program that will use project water to displace wells and surface water diversions that impact flow impaired salmon streams during critical periods. The objective of the program is to use source exchange water in a manner that will provide the greatest biological benefit to flow impaired streams in watersheds served by project water. Currently this would include watersheds in both King and Pierce Counties. The WSP commitments to source exchange are as follows: during Phase I the permit holder will provide a minimum of 4 mgd source exchange water, capped at 4,500 af/yr, to address source exchange needs identified to exist among any utility receiving water from the WSP. After Phase II commences, the commitment increases to 8 mgd, capped at 11,000 af/yr.

- **Water Quality and Fish Habitat Benefits from Bypass Reach Flow Enhancement.** The WSP commits to increased flows in the 21-mile Bypass Reach of the White River during the 3 months of February, March, and April. The FERC license, now stayed pending appeal, provides for winter flows during those months of 180 cfs. The WSP, however, would increase flows to 250 cfs during those 3 months. As discussed earlier, Ecology's analysis indicates that increased flows during these months could significantly help to reduce high phosphorus and thus high pH conditions in the Bypass Reach. The cities of Buckley and Enumclaw will be making substantial investments in treatment technologies to control phosphorus and resulting pH excursions, and those treatment technologies are far more likely to succeed in lowering pH if flows are higher during these 3 winter months. Further, the additional winter/early spring flows are expected to provide biological benefits to rearing and out-migrating salmonids.

- **Protection of Riparian or Adjacent Wildlife Lands.** As a part of its public interest proposal for this application, PSE has agreed to donate to the state or an entity it designates 500 acres of its existing ownership of riparian or adjacent wildlife lands in the White River Basin for use as a conservation area. This donation will secure the continued protection of this habitat for fish or other wildlife as well as provide potential opportunities for recreation and education consistent with the land's conservation status.

- **Increased Likelihood of continuation of the Hydropower Project, Lake Tapps, and Wildlife Values and Groundwater Recharge Associated with Lake Tapps.** Lake Tapps was created as the reservoir for the White River Hydropower Project. The project owner and applicant PSE states that the economics of the project under the FERC license on appeal is questionable and that the potential exists that the project would be shut down if the economics of the project do not improve. PSE's shutdown of the project would likely result in the loss of this renewable source of public energy and could result in the loss of Lake Tapps, a significant resource for public recreation and aesthetic enjoyment, and for recharge of regional aquifers and local springs and streams, some of which provide public water supply. PSE states that the sale of the water right for the WSP would substantially increase its ability to continue the hydropower project and maintain Lake Tapps.

- **Priority of Maintaining Lake Levels over Generating Hydropower.** The WSP commits PSE to prioritize maintaining a minimum recreational lake level on Lake Tapps over generating hydropower as provided in the Reservoir Management Plan. Absent this new commitment, PSE would have no obligation to forgo hydropower generation if necessary to maintain a minimum public recreational lake level.

- **Improved Aquatic Habitat in the Lower White/Puyallup Rivers from the Flow Augmentation Plan.** The Flow Augmentation Plan (FAP) would improve aquatic habitat and provide a benefit to fish when Puyallup River flow is below the MIF. This would occur by increasing instream flows during the most critical periods - non-hydropower generating hours. Under the FAP, whenever Puyallup River flows are below the MIF, avoidance water would be released to ensure that the water supply withdrawals are not causing a reduction in flow. These avoidance water releases would occur continuously as long as flows remained below the MIF and would increase flows by up to the rate of water supply withdrawal or the MIF, whichever is less. Since FAP releases occur during non-generation hours they also provide an improvement in habitat conditions over the present situation in which the

hydroelectric project operates in a peaking mode and releases no water during the periods of lowest flow. Also, the Reservoir Management Plan includes a reservoir refill restriction that applies during MIF shortfalls that will serve to mitigate the effect of the WSP on the Lower White & Puyallup Rivers. Benefits of reducing flow minima during MIF events are expected to more than offset the adverse effects of lowered flows during post-augmentation periods.

Step 2: Analysis of Potential Public Interests Potentially Harmed by the WSP

- **Reduction in Habitat Resulting from Reduction of Daily Average Flow.** During normal operations, the WSP would reduce flows of up to 150 cfs in the lower White and Puyallup Rivers. If fully utilized, the WSP would reduce flows at a yearly average rate of 100 cfs. The effect of this would be a reduced time interval during which river stages are higher as a result of hydropower project discharges. This change would have a mixed effect on fish habitat and the productivity of fish populations utilizing affected reaches. On the one hand, the change would be generally positive in terms of meeting temperature and DO requirements of salmonids because less Lake Tapps water of higher temperature and lower DO would be released. On the other hand, this would be negative in that higher elevation habitats would be less accessible due to the lower flows. In key downstream restoration project areas, tidal influences would moderate these effects. Overall, however, moderate reductions in usable habitat would be expected and thus this is considered to be a moderate adverse impact.

- **Loss of Habitat from Flow Reduction Following Augmentation.** The WSP would cause a significant reduction in flows in the lower White and Puyallup Rivers immediately following periods of flow augmentation. This reduction would be caused by the curtailment of hydropower releases to refill Lake Tapps if the lake was drawn down during the preceding augmentation. Typically, this curtailment of hydropower releases would result in a reduction in flows of less than 400 cfs but in some cases would be up to 1,200 cfs. These scenarios could be expected to occur 10 percent of the time and would not cause MIF violations. By reducing flows during post-augmentation, the WSP reduces the availability of aquatic habitat. Water quality generally improves during post-augmentation as a result of decreased releases from Lake Tapps, but not sufficiently to offset the loss of access to aquatic habitat.

- **Decreased Likelihood that Substantially Natural Flows would be Restored to the Bypass Reach.** Since the construction of the White River hydropower project, the 21-mile Bypass Reach has been substantially dewatered during most times of the year. To the extent that the WSP water right permit will increase the likelihood of saving the hydropower project and Lake Tapps, it will also conversely reduce the likelihood of restoring natural flows and habitat conditions to the Bypass Reach. It should be noted, however, that minimum flows in the Bypass Reach would improve from current minimum flows of 130 cfs under the FERC flows and the flow enhancement that the WSP commits to provide in February, March, and April.

- **Impact to Lake Recreation during Dry and Drought Years.** During some years, the project would impact on-lake summer recreation by drawing down Lake Tapps below recreational lake levels. This impact is caused by the water supply withdrawals and flow augmentation releases. The model results indicate that in some Dry and all

Drought scenarios, the lake would be drawn down below recreational levels during late summer for a period ranging from several days up to 3 or more weeks. Drawdown below recreational levels would be expected to occur in less than one in five years.

Step 3: Conclusion of OCPI Analysis

We conclude that the public interest benefits of the WSP *taken as a whole* clearly override any public interest detriments associated with the WSP. We find the overriding public interest benefits to be as follows: (1) the WSP will provide a significant new water supply to address reasonably foreseeable needs of CWA members and the region; (2) the WSP will provide relief to flow-impaired streams through source exchange; (3) the WSP will increase minimum flows in the Bypass Reach during late winter and early spring which will likely improve pH levels and enhance salmonid habitat; (4) due to the FAP and Reservoir Management Plan, the WSP will likely not overall significantly adversely impact aquatic resources and water quality of affected waterbodies, a result that will be difficult to achieve in another comparably sized supply project in Central Puget Sound; and (5) the WSP will result in securing protection for 500 acres of riparian or adjacent wildlife lands.

Our analysis considered the public interest benefit of increasing the likelihood of continuing the hydropower project, Lake Tapps, and wildlife habitat and groundwater recharge associated with it, all of which are significant public interests. However, some would argue that this benefit is offset by the decreased likelihood of fully restoring the Bypass Reach of the White River, which would provide substantial habitat and water quality benefits in the public interest. Further, it is difficult to assess how much approving these applications will in fact increase the likelihood of maintaining the hydropower project and Lake Tapps, since it is possible that the hydropower project would continue or Lake Tapps be maintained even if the WSP does not go forward. For these reasons, we have not given the increased likelihood of maintaining the hydropower project and Lake Tapps decisive weight in our analysis.

We have considered effects on water quality in our analysis. Aside from the likely improvement to pH levels just mentioned, based on the analysis previously discussed in Section 3.8.3 we find that the benefits and detriments to water quality will substantially offset each other and that the WSP will not cause a significant improvement or worsening of water quality.

Finally, we considered the effect on lake levels from the WSP. While the WSP increases the probability, over what would likely occur if the hydropower project continues and operates without the WSP, of lowering lake levels during the recreation season of approximately one in five years, it also provides benefits to lake levels. As indicated above, the WSP increases the likelihood of the lake being continued near its current condition, and it subordinates use of lake water by the hydropower project to maintaining a minimum lake level during the recreation season.

For the reasons stated above, we conclude that an OCPI exception to the closure of the White River is clearly warranted, and therefore that water is available for this new appropriation.

Section 6.02 4.2 Beneficial Use

Beneficial use analysis involves two elements: (1) whether the proposed use is a beneficial use and (2) if so, whether the project proposed in the application is reasonably expected to beneficially use the water quantity sought within a reasonable period of time. The latter element is in part based on the anti-speculation element of water law. The purpose of preventing speculative use is to promote the full and efficient utilization of water resources by preventing someone from holding a water right

without defined and reasonable use when the water would otherwise be used for other beneficial purposes.

As to the first element - the identity of the use as a beneficial use—the proposed use is for public water supply and municipal water supply, including industrial and commercial supply. These purposes are all recognized under RCW 90.54.020 as beneficial uses of water. (Under current law, PSE is not a municipal water supplier. However, under 2ESSHB1338, effective September 2003, PSE as a deliverer of water for municipal supply, or a assignee number of these rights that provides water for more than 15 residential units, will be considered a municipal water supplier.)

As to the anti-speculation element of beneficial use, the demand and supply analysis and the source exchange program indicate an average annual need by CWA members of approximately 28 mgd by 2034 and 55 mgd by 2053, plus source exchange. That need would increase if a higher level of demand occurs, other utilities in the region purchase project water, or source exchange exceeds minimum levels or estimated use. We conclude that the average annual amount of 64.6 mgd that PSE has applied for is reasonable in light of this analysis. However, because the analysis is predicated upon projections of demands and supplies 50 years in the future, it is appropriate to provide a mechanism to true up the quantity permitted with the need projected at a time closer to the time when full use would occur. Thus, this permit provides that in 2036 Ecology will reassess the level of need projected for 2053, and if the reasonably projected need including source exchange requirements is less than 64.6 mgd, the amount of the permit will accordingly be reduced in a superseding permit.

The conclusion that the amount of water applied for is reasonable and not speculative is further reinforced by two additional observations. First, water available for meeting future population and economic growth is becoming increasingly scarce or unavailable and the planning horizon for locating and permitting new public water supply sources and needed infrastructure has considerably lengthened. Thus, a longer time horizon for assessing the need for future municipal supplies under these circumstances is appropriate. Lastly, the WSP is in the unique situation where the water applied for will be used for a beneficial use (hydropower generation) even if the applied for amount is not fully used and perfected. That use would occur because PSE will continue to generate electricity with any Lake Tapps water that is not used for public water supply.

In summary, the anti-speculation requirement and its rationale are addressed in four respects here: first, supply and demand data and source exchange commitments indicate a reasonable need for the water sought; second, the permit places a mid-course check on the amount permitted to correct any overestimation of need that may exist due to the 50-year term of the permit; third, in the central Puget Sound region it is appropriate to assess need on a longer timeframe for new large public water supplies which require increasingly longer periods of time to permit and develop; and fourth, in the event that actual need does not reach the permitted amount, PSE will nonetheless beneficially use the water to generate electricity at the hydropower project.

Section 6.03 4.3 Impairment

To grant a permit Ecology must find that the third test of RCW 90.03.290 is met, that the appropriation will not impair any existing water rights. PSE has filed two separate applications involving two appropriations, a primary one of 2,000 cfs (QI) and 72,400 af/y (QA) from the White River, and a secondary one of 150 cfs (QI) and a average annual average of 100 cfs (QA) from the Lake Tapps reservoir. Each application must be examined separately for purposes of impairment.

1. Primary appropriation of 2,000 cfs, 72,400 af/y from the White River.

PSE currently diverts 2,000 cfs from the White River for hydropower generation at the same point of diversion that would be used for the public water supply diversion. This diversion is made pursuant to a pre-code water right for which PSE filed a claim on June 10, 1974, asserting a right to divert 2,000 cfs for hydropower production. For purpose of this ROE, Ecology preliminarily investigated this claim, and has tentatively determined the right to be valid. The investigation found evidence that diversion of water for hydropower generation occurred prior to 1917 and that PSE or its predecessor diligently increased diversion under the right to reach 2,000 cfs within a reasonable time thereafter.

Since the new appropriation for public water supply is proposed to be conditioned so that the combined diversion from the river will not exceed 2,000 cfs, if the hydropower right would otherwise be fully utilitized at 2,000 cfs, the new appropriation would not increase the amount of the diversion. Historically, the diversion from the river has not always been fully utilitized; however, the primary reason for under use has been the limitations of the current diversion structure. PSE plans to replace that structure after a new FERC license is finalized. It is reasonable to assume that the new structure in place would divert the full amount it is legally authorized to divert subject to instream flows to the extent that is reasonably feasible. Because the new 2,000 cfs appropriation by itself is not expected to increase appropriation from the White River, we do not expect it would cause any impairment or detriment to existing rights. Further, if some additional appropriation might occur, it is likely to be small and unlikely to impair any existing rights including the instream flow right established for the Puyallup River.

2. Secondary appropriation of 150 cfs (Qi) and an average of 100 cfs/yr (Qa).

The secondary appropriation is for public water supply diversions from Lake Tapps. During regular operations of the WSP, a reduction in daily average flows of up to 150 cfs would occur in the lower White River and downstream in the Puyallup River. The effect of this would be a reduced time interval during which river stages are higher or a reduction in magnitude as a result of hydropower project discharges. However, the WSP contains a number of provisions intended to prevent this reduction from impairing other existing water rights, and in particular the water right established under WAC 173-510-030 to provide minimum instream flows (MIFs) on the Puyallup River. MIFs may be impaired if a new appropriation will increase the duration or extent of shortfall below MIF levels.

During times the MIFs are not met at the Puyallup River gage, PSE has committed that the hydropower project will release additional water to avoid creating a reduction in flow due to the WSP diversion. These releases, referred to as avoidance flows, would occur continuously as long as flows remain below the MIF and would increase flows by up to the rate of water supply withdrawal or the MIF, whichever is less. These avoidance flows provide a substantial benefit to the lower Puyallup River. Without the WSP and avoidance flows, the hydropower project would release water diverted from the river typically only on week days and then only a limited number of hours a day, typically as a morning hydropower peak and a second peak in the afternoon. Rather, the avoidance flows will generally be released throughout the week and the day. Thus, avoidance flows will reduce the level of daily fluctuation in river levels caused by the hydropower project and increase the lowest daily flows by up to 150 cfs and likely average at least a 100 cfs/yr increase in low flow during MIF shortfalls. This increase in flow would substantially eliminate MIF violations of 100 to 150 cfs that would have occurred without the WSP, and decrease the shortfall below when MIF violations are higher than 150 cfs.

Providing avoidance flows, however, does not in itself prevent reduction in flow during periods of MIF violations. By using part of the 2,000 cfs flow that would otherwise be used for hydropower generation, the WSP will affect the amount of water available to the hydropower project to release. As a result, the project will reduce hydropower releases to the lower White and Puyallup Rivers in

magnitude and/or duration. For example, if during a day of MIF violations the hydropower project absent the WSP would have generated for 8 hours at 2,000 cfs, the hydropower project might generate for 6 hours at 1,500 cfs if the avoidance flows and WSP diversion consume part of that water.

To mitigate reduction in hydropower releases during days in which MIF shortfalls occur, the Reservoir Management Plan (described in PSE's June 24, 2003 memorandum) also commits PSE to the following restrictions on reservoir operations. During MIF shortfalls in the winter and summer PSE will not increase the amount of water sorted in Lake Tapps. During MIF shortfalls in the spring, PSE will not increase the rate of refill beyond that which is needed to reach lake level elevations negotiated with the Lake Tapps Task Force. These conditions generally require that during a MIF shortfall the total flow released from Lake Tapps with the WSP would match the release under the Baseline Condition (with the possible exception related to maximum spring refill rates as described in item 8 in the "Limitations of Hydrologic Analyses" subsection of 3.8.1.2 above.).

Together, the avoidance water releases and the conditions of the Reservoir Management Plan overall would reduce the duration and magnitude of MIF violations. Avoidance flows would provide more uniform releases during the week and day and eliminate most MIF shortfalls in the 100-150 cfs range. The Reservoir Management Plan would provide additional hydropower releases when avoidance water is not sufficient to correct the MIF shortfall. Thus, we conclude that the WSP under these requirements is likely to improve compliance with the MIFs and, therefore, will not impair the MIF.

Turning now to the question of potential impairment of any existing water rights other than the MIF, we are unaware of any past incidence where any of those rights has been unable to be fully utilized due to flow issues in the lower rivers. We further are unaware of any basis for concluding that the anticipated reduction in flow conditions in the lower rivers when MIFs are met is likely to adversely impact any of these existing rights. Similarly our earlier conclusion that the WSP is likely to improve flow conditions when MIFs would otherwise not be met supports the conclusion that the WSP will not impair other existing water rights.

The Puyallup Tribe of Indians and the Muckleshoot Indian Tribe assert that the WSP would impair water rights they claim under treaties and federal reservations and aboriginal rights. Under the treaties of Medicine Creek (1854) and Point Elliott (1855), the Puyallup Tribe of Indians and the Muckleshoot Indian Tribe retain the right to take fish in their "usual and accustomed" areas, inclusive of the Puyallup/Carbon/White River Basins. The White and Puyallup Rivers and their tributaries are among the Tribes' usual and accustomed fishing places and the Tribe relies upon fish runs that use the habitat of these rivers in exercising its protected treaty fishing rights. The Puyallup and Muckleshoot Tribes utilize fish from these basins for commercial, subsistence, and cultural purposes. Several courts have recognized reserved treaty rights for water to preserve fishing rights. *United States v. Adair,* 723 F.2d 1394 (9th Cir.), *cert. denied*, 467 U.S. 1252 (1984); *Ecology v. Yakima Res. Irr. Dist.,* 850 P.2d 1306 (Wash. 1993).

In addition to water quantity issues, both the Puyallup and Muckleshoot Tribes assert authority over water quality standards on reservation property. The White River runs through the Muckleshoot Indian Reservation, giving the Tribe regulatory authority over water quality in the Reservation reach of the River. Additionally, the lower Puyallup is adjacent to lands of the Puyallup reservation. The tribes contend that the applications will cause impairment by worsening water quality in impacted river segments.

A court has not adjudicated the validity and quantity of tribal water rights to water of the White and Puyallup Rivers. Nor have the Tribes identified a specific quantity for purposes of their impairment claim. Our earlier conclusions that the WSP will not have a significant negative impact on water

quality and will significantly improve on compliance with minimum flows for fish lead us in turn to conclude that the WSP will not impair any tribal rights to flows that are necessary to support the fisheries. If, however, at a future point in time, evidence of actual or likely impairment of a tribal right should arise, the Tribes can seek legal relief to protect their senior rights.

Section 6.04 4.4 Public Interest

The fourth and final test for issuance of a water right permit is the requirement that the appropriation not be detrimental to the public interest. The effects of the WSP on the public interest were already analyzed above in Section 4.1 above, where it was concluded that overriding considerations of public interest clearly support the granting of the applications.

ARTICLE VII. 5.0 RECOMMENDED DECISION

Based upon our findings that the applications meet each of the four tests for approval under RCW 90.03.290, we recommend that the applications be approved pursuant to the following development schedule and conditions:

Section 7.01 5.1 Quantities Approved

- Surface Water Permit S2-29920 in the amount of 2,000 cfs, not to exceed a withdrawal of 72,400 af/y, of water from the White River for public water supply (including industrial and commercial purposes) and related recreation and flow augmentation. (PSE's application also sought water for municipal water supply purposes. Under current law, PSE is not a municipal water supplier. However, under ESB1338, effective September 2003, a deliverer of water for municipal supply or an assignee of these rights that provides water for more than 15 residential service connections, will be considered a municipal water supplier.)

- Reservoir permit R2-29935 to store the waters of the White River in Lake Tapps that would be diverted from the river (up to 2,000 cfs of water, not to exceed a withdrawal of 72,400 af/y) pursuant to application S2-29920 for public water supply (including industrial and commercial purposes) and related recreation and flow augmentation.

- Surface Water Permit S2-29934 to divert a daily peak rate of 150 cfs and a daily average per year of 100 cfs, not to exceed a withdrawal of 72,400 af/y for public water supply (including industrial and commercial purposes) and related recreation and flow augmentation.

Section 7.02 5.2 Development Schedule

(a) 5.2.1 Introduction

The Development Schedule for the Lake Tapps Water Supply Project sets forth the dates and corresponding conditions that the permit holder must meet for the development of water for public water supply purposes.

(b) 5.2.2 Public Water Supply

The permit holder shall develop a Lake Tapps Reservoir Project Water System Plan (Water System Plan) which shall be updated every 6 years. The updates shall contain the most current projected total Baseline water demand assuming continuation of existing and DOH required conservation planning, and adjusting for water available under other CWA existing water rights and contracts and water that may be available through additional conservation and reuse programs. The updates shall also provide

the most current information on the success of the Source Exchange Program in meeting the goals for targeted surface waters. Based on the information provided in the updated Water System Plan, Ecology may, by written decision to the permit holder, require additional conservation measures consistent with adopted State criteria and to establish the quantity of water that the permit holder may need over a specific future period of time and adjust development schedule accordingly.

The water supply project for Lake Tapps Reservoir (the "Project") will be developed in two phases. Phase I of the Project will be implemented as follows:

- Begin Construction December 31, 2016
- Complete Construction December 31, 2024
- Proof of Appropriation December 31, 2036

After the Proof of Appropriation form has been received for Phase I, Ecology will issue a Certificate of Water Right for the perfected portion of the water right, and a Superseding Permit for the second phase. Phase II of the Project will be implemented as follows:

- Begin Construction December 31, 2016
- Complete Construction December 31, 2040
- Proof of Appropriation December 31, 2053

(c) 5.2.3 Pre-Construction Requirements

Prior to beginning construction on the WSP, the permit holder is responsible for preparing a series of documents and demonstrating due diligence on several elements of this project. Dates for these tasks have been established as follows:

1. Development of schedule and procedures for the implementation of the Source Exchange Program as described above. Due within one year of state designation of Priority Surface Waters.
2. Execute preliminary agreements as necessary with other utilities and any regional water providers on the shared use of regional transmission facilities. Due December 31, 2005.
3. Prepare Lake Tapps Reservoir Regional Water System Plan in accordance with the Department of Health (DOH) regulation, and submit the Water System Plan to DOH for approval by December 31, 2005. The Water System Plan and required updates shall include:
   - Project descriptions and plans.
   - Updated supply and demand projections to reflect current conditions and factors affecting supply and demand, including Growth Management Act (GMA) plans and assuming continued implementation of state and regional conservation guidelines (i.e. CPS Program), and adjusting the demand for water available under other water rights and water that may be available to permit holder through additional conservation and reuse programs
   - Capital Improvement Plan (CIP) for water treatment, storage, and transition facilities with construction schedule.
   - Financing and operations plan.
   - Implementation agreements.
   - Information on and status of design, routing, siting and necessary studies for strategic and near-term water treatment plant and transmission projects.
   - Results of the Source Exchange Program, including revisions to the list of Eligible Utilities and Targeted/Priority Surface Waters and the success of the Program in meeting the goals for improving stream flows for fish.

Prior to the end of each 6-year cycle and through the entire development of the Project, the permit holder shall prepare and submit to DOH for approval, an update of the Water System Plan. The Water System Plan shall be submitted to Ecology to confirm its compliance with the Development Schedule and the conditions of the Report of Examination.

(d) 5.2.4 Grounds for Extensions of Construction Schedule

The issuance of this water right permit does not constitute a reservation of public water, as provided for under Chapter 173-590 WAC. In issuing this water right permit; it is the intent of the Department of Ecology to allocate adequate water for the purposes of supplying a projected 2053 population located within the Central Puget Sound POU. The permit holder is responsible for filing for additional water rights to meet water supply needs beyond 2053.

Consideration of any extensions shall require a showing of good cause. Given the length of the development schedule and other factors, it is critical that project tasks and deadlines be timely completed and that any extensions be minimized and well-justified. Factors that Ecology will consider in any future applications for extension shall include but not be limited to:

- The efforts made to accomplish the task for which extension is sought,
- The extent to which the project and project tasks have overall been completed,
- The most current information on future supply and demand,
- The extent to which the task in question cannot be completed due to reasons beyond the control of the applicant which could not have reasonably be anticipated to avoid the delay, and
- The permit holder's ability to obtain commitments to convey and purchase specific volumes of water.

Section 7.03 Phase I

Begin Construction (BC) Date - December 31, 2016. By December 31, 2012, conceptual design of the water treatment plant and transmission facilities for Phase I will be submitted to Ecology. December 31, 2016, shall be the target date on which to begin the design and site work for the construction of the facilities necessary for the water treatment plant and transmission system.

Pre-Diversion Requirements. Prior to the diversion of water from Lake Tapps for water supply, the permit holder is responsible for completion of the following tasks: 1) provide the mechanism for releasing avoidance flow at the tailrace to implement the FAP as described in 2.2.4; 2) submit documentation to Ecology that the MIF avoidance water predictive tool as described in 2.2.4 has been tested and the performance standard of a false negative (failure to predict a MIF excursion) error rate of less than 10 percent can be met; 3) construct a tailrace barrier dam designed as required in the FERC license (See 3.7.2); 4) complete land transfers to donate 500 acres of riparian or wildlife land adjacent to the White River to the state or an entity it designates for use as a conservation area.

Complete Construction (CC) Phase I (December 31, 2024). December 31, 2024, shall be the target date for the permit holder to complete construction of the Phase I treatment and transmission facilities for the use of public water supply and source exchange through 2033. The Completion of Construction Form may be filed once:

1. The water treatment plant is completed and the system is physically equipped to treat full Phase I capacity; and

2. A transmission system is available in accordance with the Water System Plan, including appropriate agreements to use other entities' transmission systems, is in place, and water may be physically moved.

Proof of Appropriation (PA) Phase I (December 31, 2036). By June 1, 2036, the permit holder shall submit to Ecology all pertinent information regarding actual use of public water supply and anticipated future use of public water from Lake Tapps Reservoir under this permit. By December 31, 2036, Ecology may issue a water right certificate for the quantity of water that has been perfected under the permit for public water supply and a superseding permit for the remaining quantity of water that is reasonably projected to be perfected by 2053 as public water supply as provided in the initial permit.

If Ecology finds the projections show that the total quantity of water authorized in the permit for public water supply will not be perfected by 2053 and good cause is shown to extend the development of the permit beyond 2053, Ecology shall issue the superseding permit for a period beyond 2053 not to exceed growth and water use projections to 2063. Ecology's evaluation will include but not be limited to review of the water system plan updates for the Project, King and Pierce County Coordinated Water System Plans, other regional planning documents, and water supply contracts between other water utilities in the area.

Issuance of a superseding permit will be contingent on the permit holder providing Ecology with evidence that:

1. Entities utilizing project water are in compliance with conservation standards consistent with the most current state or regional guidelines (i.e., CPS Program).

2. The permit holder has complied with the conditions and terms of the permit including but not limited to the minimum flows, the 2,000 cfs combined diversion limit, the FAP, the Reservoir Management Plan, and the Source Exchange Program.

3. The permit holder providing information on actual use of water and projected demand as described above.

4. Permit holder has assessed demand for additional future regional water needs, and, if permit holder deems necessary, has pursued additional water supplies, which may include filing an Application for Water Right to address future regional needs.

The superseding permit will include the following:

1. Updated existing provisions deemed necessary for water management goals, which, by example may be water conservation measures and metering requirements.

2. Revised demand projections and development schedule. Ecology's evaluation will include but not be limited to a review of the Water System Plan, King and Pierce County Coordinated Water System Plans, updated planning documents such as the Central Puget Sound Water Supplier's Outlook, and the existence of water supply contracts between other water purveyors pertinent to the place of use, i.e., Source of Alternative Supply Analysis.

3. Ecology will review the quantities committed to the Source Exchange Program and if necessary adjust such quantities, not to exceed the maximum quantities currently stated as available in the Program.

Phase II

December 31, 2016, is the beginning construction date for both phases, as this is the date on which the physical construction of the water treatment plant and transmission system is to have begun. The Beginning Construction form filed on December 31, 2016, will address both construction phases.

Pre-Development Requirements - Phase II. By December 31, 2030, the permit holder shall:

1. File with Ecology an updated list of utilities participating in the Source Exchange Program, including evidence that individual water system plans include provision for participation.

2. File with the DOH, with proof of submittal to Ecology, the conceptual design of the water treatment plant and transmission facilities for Phase II.

Complete Construction (CC) Phase II (December 31, 2040). December 31, 2040, is the target date for the permit holder to complete construction of Phase II treatment and transmission facilities and begin beneficial use of the water and continue implementation of the Program. The Completion of Construction form may be filed once:

1. The water treatment plant is completed and the system is physically equipped to treat full Phase I and Phase II capacity; and

2. A transmission system is available in accordance with the Water System Plan, including appropriate agreements to use other entities' transmission systems, is in place, and water may be physically moved.

Begin Use of Phase II Water Date (December 31, 2040). Use of Phase II water shall begin by December 31, 2040. However, such water use may not begin unless the permit holder has provided written evidence to Ecology that:

1. Entities utilizing project water are in compliance with conservation standards consistent with the most current State and regional guidelines (i.e., CPS Program).

2. The Source Exchange Program, as approved by the Ecology, is being complied with and will be complied with as required for Phase II.

3. Permit conditions are being complied with, including but not limited to minimum flows, the 2,000 cfs combined diversion limit, the FAP, the Reservoir Management Plan, and the Source Exchange Program.

Proof of Appropriation (PA) Phase II (December 31, 2053). Proof of Appropriation must be demonstrated on or before December 31, 2053, or as provided in the superseding permit. A water right certificate may be issued for that quantity of Phase II Water applied to full beneficial use as of that date. The water will be considered fully utilized based on the instantaneous withdrawal rate for a maximum day (QI) and the average rate for at least one month (QA) unless otherwise agreed to by permit holder and Ecology.

Section 7.04 5.3 Other Provisions and Conditions

5.3.1 This authorization to make use of public water granted by the State of Washington is subject to existing water rights, including any existing rights held by the Tribes United States for the benefit of Tribes under treaty or settlement.

5.3.2 The combined instantaneous diversion of water from the White River for water supply under this authorization and for hydropower generation pursuant to the rights claimed by PSE shall not exceed 2,000 cfs at any time.

5.3.3 If the FERC license is issued, the diversion from the White River for the water permit shall be subject to the MIFS and ramping rates established by FERC in the final license order. If a final FERC license is not issued or accepted, the diversion from the White River for this water permit shall be subject to the MIFS recommended by the NMFS and Agencies (see Table 1 (supra 2.2.1)) and the standard WDFW ramping rates. If the license is issued by FERC and subsequently cancelled, or the minimum instream flows contained in the license are eliminated, then the diversions from the White River for water supply purposes shall be subject to the FERC MIFS and ramping rates established in the most recently issued FERC license.

5.3.4. The permit holder shall fully adhere to the requirements of the FAP (Appendix A) as clarified by the conditions below, the reservoir management plan (attached as Appendix B), and all other conditions in the permit that involve operation of the hydro-power project, including all rights to divert and store water. Gauging must be maintained to insure that the MIF avoidance water performance standard of a false negative error rate of less than 10% can be met.

5.3.5 Within three months of when the Town of Enumclaw either operates and discharges into the White River through a new water treatment facility, or operates under an alternative treatment plan that may include land application or connection to other approved wastewater treatment facilities, PSE shall begin operating its diversion on the White River to ensure 250 cfs flows in the Bypass Reach from February through April, as provided in the FAP. Upon application by PSE, Ecology shall unconditionally transfer the necessary portion of PSE's hydropower water right to state trust dedicated solely to provide instream flows for protection of water quality and habitat.

5.3.6 For purposes of the reservoir management plan, the rate "necessary to meet target summer recreational levels" shall be the average rate necessary to refill the reservoir from the elevation at the end of the winter low pool period to the target summer recreational level at the start of the summer recreational period or earlier, provided PSE notifies Ecology of the target date prior to the start of refill. The rate will be determined for each year based on when the winter low pool period ended (defined as the earliest date in winter/spring that consistent increases in reservoir storage began) and the target full pool date.

5.3.7 If the permit holder and/or hydropower operator anticipates that future noncompliance with the FAP or Reservoir Management Plan will occur, and that such noncompliance cannot be reasonably and feasibly avoided, it shall notice Ecology in writing as soon as possible prior to the noncompliance. Such notice shall state the reason for the anticipated non-compliance and identify all efforts to minimize the duration and extent of noncompliance to the greatest extent reasonable and feasible. Filing of such notice does not limit Ecology's authority to issue penalties for non-compliance or to take other enforcement action. Within one week (or such other arrangement accepted by Ecology) of a noncompliance event, the permit holder and/or hydropower water right claimant shall provide Ecology a written report on the noncompliance identifying its extent and duration, any known impacts, the reasons for the noncompliance, and efforts to minimize the extent and duration.

5.3.8 If PSE assigns or otherwise transfers any of the water rights authorized in this permit, the conditions of this permit that specifically involve the operation of the hydro-power project, including

but not limited to 5.3.2 through 5.3.7. and 5.3.16 shall remain binding on PSE and any successors in interest to the hydro-power facility. This condition shall apply as long as PSE or its successors in interest continue to operate the hydro-power project.

5.3.9 The permit holder shall fully implement and comply with the Source Exchange Program as provided above in Section 2.2.7.

5.3.10 The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Office of Water Supply, Department of Health, 1112 SE Quince Street, PO Box 47890, Olympia, Washington 98504-7890, prior to any new construction or alterations of a public water supply system.

5.3.11 The permit holder is advised that the quantity of water allocated by this permit is subject to the development schedule as provided in 5.2, which provides in part that the permit may be reduced at the time of final certification to reflect system capacity and actual usage. This water right authorization contains a dual construction schedule and provides that by December 31, 2036, Ecology may issue a water right certificate for the quantity of water that has been perfected under the permit for public water supply and a superseding permit for the remaining quantity of water that is reasonably projected to be perfected in the future as public water supply as provided in development schedule.

5.3.12 An approved measuring device shall be installed and maintained for the Lake Tapps Water Supply diversion in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

5.3.13 Water use data shall be recorded daily. The maximum monthly rate of diversion/withdrawal and the monthly total volume shall be submitted to Ecology in digital format by January 31st of each calendar year. Ecology is requiring submittal of daily meter readings to collect seasonal information for water resource planning, management and compliance.

5.3.14 The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units:

1. Monthly meter readings including units;
2. Peak monthly flow including units;
3. Department of Health WFI water system number and source number(s);
4. Purpose of use; and
5. Open channel flow or pressurized diversion.

Other Monitoring and Reporting Requirements

5.3.15 After the WSP is initiated, documentation will be submitted to Ecology every 5 years to demonstrate that MIF avoidance water predictive tool is meeting the performance standard.

5.3.16 PSE shall continuously monitor (sampling frequency of no less than one every 30 minutes) waters for dissolved oxygen and temperature at two locations: 1) above the tailrace barrier dam; and 2) downstream of the tailrace barrier dam but prior to mixing with bypass flows, to demonstrate that water discharged from the tail race meets the states dissolved oxygen standard of 8.0 mg/l. PSE may also, at its discretion, collect any other additional data necessary to demonstrate compliance with water quality standards, including standards for mixing zones defined in WAC 173-201A-100. The monitoring period will begin no later than 90 days after tailrace barrier dam installation and continue for one year. Ecology may require an additional year of monitoring if flows upstream of the tailrace

barrier dam do not reasonably characterize the historic range of operating conditions. Within 90 days of the end of the first year of monitoring (and after the end of the second year if PSE collects data for a second year), PSE will submit a report to Ecology that describes the data collection program, the methods used to collect the data, and the data.

5.3.17 Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information."

5.3.18 Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements."

5.3.19 Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

5.3.20 Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

5.3.21 Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

5.3.22 On an annual basis the permit holder shall submit to Ecology a report summarizing and documenting compliance with the various elements of the FAP and the reservoir management plan.

ARTICLE VIII. 6.0 FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Surface Water Application Number S2-29934, subject to existing rights and the recommended conditions and provisions above, (Section 5 in its entirety), to allow appropriation of public surface water within the place of use and at the point of diversion proposed in this application.

The statutory permit fee for this application is $600.00.

Signed at Olympia, Washington, this _____ day of _____, 2003.

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

The following page is a scanned copy of the page of the Report of Examination with the date and signature

barrier dam do not reasonably characterize the historic range of operating conditions. Within 90 days of the end of the first year of monitoring (and after the end of the second year if PSE collects data for a second year), PSE will submit a report to Ecology that describes the data collection program, the methods used to collect the data, and the data.

5.3.17 Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information."

5.3.18 Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements."

5.3.19 Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

5.3.20 Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

5.3.21 Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

5.3.22 On an annual basis the permit holder shall submit to Ecology a report summarizing and documenting compliance with the various elements of the FAP and the reservoir management plan.

ARTICLE VIII. 6.0 FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Surface Water Application Number S2-29934, subject to existing rights and the recommended conditions and provisions above, (Section 5 in its entirety), to allow appropriation of public surface water within the place of use and at the point of diversion proposed in this application.

The statutory permit fee for this application is $600.00.

Signed at Olympia, Washington, this 30th day of June, 2003.

Thomas Loranger

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

ARTICLE IX. 7.0 REFERENCES

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Attachment 1

Perkins Coie

111 Market Street N.E., Suite 200
Olympia, WA 98501-1008
PHONE: 360.956.3300
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www.perkinscoie.com

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June 13, 2003

HAND DELIVERED

Mr. Tom Loranger
Program Manager
Water Resources Program
Southwest Regional Office
Department of Ecology
P.O. Box 47775
Lacey, WA 98504-7775

Re: Applications No. S2-29920, No. S2-29934, and No. R2-29935

Dear Mr. Loranger:

Please consider this letter and the attachments herewith Puget Sound Energy's formal submittal of additional information regarding specific elements of the applications referenced above. This additional information is provided based upon the discussions that Puget Sound Energy (PSE), Cascade Water Alliance (CWA), and Department of Ecology (Ecology) have had over the last several months. The information is as follows:

1. PSE is submitting a modified Flow Augmentation Plan (FAP). The Plan is enclosed. Under this modification, Enhancement Water is eliminated. The modified FAP also clarifies and analyzes the augmentation plan based upon an hourly rather than daily average flow. The priority of water used from the reservoir and the maintenance of lake levels are provided and discussed in the modified FAP.

2. In conjunction with the modified FAP, PSE is proposing to operate its diversion at the White River in a manner that will provide flows in the bypass reach of the White River of 250 cfs from February 1st to April 30th of each year. This proposal is briefly discussed in the modified FAP and will not be provided in any separate document. Please consider this letter the complete proposal regarding these additional bypass flows. The specific elements of the proposal are:

a. PSE will operate the diversion dam to ensure flows in the bypass reach from February 1st to April 30th of each year of 250 cfs;

b. The purpose of these additional flows is to address Ecology's concerns regarding pH levels in the bypass reach. Ecology believes these additional flows will address pH levels remaining after the Town of Enumclaw and Town of Buckley have upgraded their wastewater treatment facilities that discharge into the White River;

c. PSE will implement this proposal in conjunction with the Town of Eatonville and Town of Buckley's completion and utilization of new wastewater treatment plans and facilities that address pH issues. The water necessary to meet the 250 cfs flow will therefore first be provided within 3 months of the Town of Enumclaw either:

1. Operating and discharging into the White River through a new wastewater treatment facility; or

2. Operating under an alternative treatment plan that may include land application or connection to other approved wastewater treatment facilities.

d. Ecology will approve an application by PSE to change its existing water right to trust water for instream flow purposes in the quantity necessary to meet this provision.

3. The permittee will comply with the Source Exchange Program that is provided in the enclosed document.

4. PSE will donate 500 acres of land that it owns in the White River basin to the State or another entity that the State may designate for conservation purposes. By July 1, 2004, PSE, in cooperation with the State, will designate the specific 500 acres and deed land to the State or the designated entity free and clear of all liens and encumbrances, with the exception of rights-of-way owned by PSE for operation of its White River project and any other encumbrances that PSE and the State agrees upon.

Please do not hesitate to call if you have any additional questions or comments. PSE and CWA look forward to your final decision in this matter. Thank you again for all you and your staff's commitment and efforts.

Very truly yours,

Tom McDonald

Tom McDonald

TM:vla

cc: Ed Schild, PSE
Mike Gagliardo, CWA

TO: TOM MCDONALD; PERKINS COIE

FROM: CLAIR YODER, MIKE RAMEY; R2 RESOURCE CONSULTANTS
PAUL WETHERBEE; PSE

SUBJECT: NEW HOURLY FLOW AUGMENTATION PLAN AND IMPACTS ON LAKE TAPPS RESERVOIR WATER SURFACE ELEVATIONS

DATE: 6/12/03

CC: ED SCHILD, PSE

INTRODUCTION

Since the April 30, 2002 submittal of *Technical Memorandum No.17 Instream Flow Protection and Flow Augmentation Plan*, Puget Sound Energy (PSE), in consultation with the Department of Ecology (Ecology), has modified the proposed flow augmentation plan (FAP). The new FAP contains the following features:

1. The new plan is in effect on an hourly basis.
2. The new plan does not include Enhancement Water.
3. The new plan provides for PSE to operate its diversion to ensure 250 cfs in the bypass reach during the months of February through April.

This memorandum describes the components of the new FAP and the impacts of the new plan on the modeling results presented in the April 30, 2002 submittal of the Lake Tapps Reservoir Water Right Feasibility Report. The memorandum will first review the old flow augmentation plan then describe the components of the new plan and the potential changes to previous modeling results. Finally, it will provide some background information on the work to date related to the hourly evaluation and describe how the new plan will impact Lake Tapps Reservoir water surface elevations.

OLD FLOW AUGMENTATION PLAN

The old flow augmentation plan is described in detail in TM 17. There are four components:

1. **Minimum Instream Flow (MIF) compliance** at PSE's White River Diversion Dam as determined through the FERC process,
2. **Avoidance Water** directly offsets the potential for impacts caused by water supply withdrawal during periods of MIF excursions. When a MIF excursion is anticipated to occur at the Puyallup River gage, Avoidance water is triggered up to the amount of water withdrawn for water supply or to the amount of water needed to meet the MIF, which ever is less.
3. **Enhancement Water** will be triggered automatically ("default trigger") unless the state agencies/tribes provide PSE with a timely request to supply the Enhancement water under a different set of factors. As long as there is water available in the water bank, the default trigger will automatically release water over and above the full and maximum amount of

Avoidance Water releases in order to avoid the anticipated occurrence of a MIF excursion at the Puyallup Gage.

4. **Refill Restriction** is designed to ensure streamflows under the MIF in the Puyallup River remain at or above those in the baseline condition. It represents any additional water released from the reservoir needed to meet the baseline condition above and beyond that released for Avoidance or Enhancement water.

NEW FLOW AUGMENTATION PLAN

The new flow augmentation plan consists of the following:

1. **Minimum Instream Flow (MIF) compliance** at PSE's White River Diversion Dam as determined by the FERC process. In addition, PSE will operate the diversion to ensure flows of 250 cfs in the bypass reach from February through April.
2. **Avoidance Water** directly offsets the potential for impacts caused by water supply withdrawal during periods of MIF excursions. When a MIF excursion is anticipated to occur at the Puyallup River gage, Avoidance water is triggered up to the amount of water withdrawn for water supply or to the amount of water needed to meet the MIF, which ever is less. A trigger mechanism will be developed to predict flows in the Puyallup River several hours ahead of time.

The new plan will not include releases for enhancement water. Instead, PSE would operate its diversion to ensure 250 cfs in the bypass reach from February through April. This component of the new FAP addresses Ecology's concerns with pH in the bypass reach and compliments upstream load reduction measures.

Reservoir Management Plan

The reservoir operations management plan is discussed in section 7.0 of TM 16 *Lake Tapps System Model Results and Reservoir Management Plan*. This section explains that reservoir operations are dependent on the withdrawal priorities and the rule curve. At the diversion dam, the first priority will be the instream flows established by FERC for the bypass reach and the additional water allowed by PSE to ensure 250 cfs in the bypass reach from February to April.

The priorities for withdrawal from the reservoir are:

1. Water Supply Project/Flow Augmentation Plan
2. Recreation (represented by the reservoir rule curve)
3. Hydropower Generation

Consistent with the previous supporting documentation presented in the Feasibility Report (April 30, 2002), the proposed water supply project with the new FAP will not create new MIF violations or exacerbate existing violations compared to the baseline condition. To meet this criteria and consistent with previous modeling reported in TM 16 *Lake Tapps System Model and Reservoir Management Plan*, hydropower releases in addition to avoidance water may be necessary to meet the baseline flows in the lower Puyallup River when flows are below MIF and reservoir levels are below the rule curve. When flows are less than the MIF requirements at the Puyallup River gage, PSE will release water for hydropower purposes to meet baseline flows before meeting rule curve elevations. The release of hydropower water under low flows was a component of the modeling work presented in the April 30, 2002 submittal of the Feasibility Report needed to meet baseline conditions. On a daily

basis, the operational impacts of the Reservoir Management Plan under the new FAP on reservoir levels and Puyallup River flows are consistent with the results reported in TM 16 *Lake Tapps System Model and Reservoir Management Plan*. Under the new FAP we do not expect any change in the modeling results because the same amount of water is released under the new FAP as in the old one.

Evaluation of the New FAP

The new FAP will be applied on an hourly basis. However, no hourly model is available and the original modeling work presented in TM 16 *Lake Tapps System Model and Reservoir Management Plan* was developed on a daily basis. In order to relate the current plan to the previous modeling work, a discussion of the new FAP evaluated on a daily basis is included for comparison.

Evaluation on a Daily Basis

The daily flow augmentation plan outlined in TM 17 was used in the results presented in TM 16 *Lake Tapps System Model Results and Reservoir Management Plan* which compare the baseline and 'with project' scenarios. As shown in TM 16 *Lake Tapps System Model and Reservoir Management Plan*, the volume of water released from the tailrace is not necessarily the same in the 'baseline' and 'with project' scenarios when flows in the Puyallup River are above the MIF requirements. However, when modeled mean daily streamflow is less than the MIF requirements, the modeled Puyallup River flows in the 'with project' scenarios are equal to or greater than the flows in the baseline scenario. Examples of flows less than the MIF requirements from the modeling results using the new FAP are presented Table 1 for the dry fall maximum demand - fall 7-day low flow scenario using the FERC 2494 bypass reach MIF[1]. This table shows that the tailrace releases (hydropower plus flow augmentation) with the water supply project are always equal to or greater than the releases without the water supply project when there is an anticipated MIF excursion at the Puyallup River gage. Likewise, the Puyallup River flows in the 'with project' scenario are always equal to or greater than the flows without the water supply project when they are less than the MIF requirements. For the two periods presented in Table 1, the MIFs for the Puyallup River are not necessarily met on a mean daily basis, but an equivalent or greater amount of water is released from Lake Tapps Reservoir in the 'with project' scenario compared to the baseline scenario. Consequently, low flows in the Puyallup River are not exacerbated with the implementation of the water supply project and may actually improve.

Table 1: Comparison of Daily Simulated Flows for Select Dates in 1992

Date	Tailrace Discharge (cfs)		Puyallup River Streamflow (cfs)		Puyallup River MIFs (cfs)
	Without WS Project	With WS Project	Without WS Project	With WS Project	
8/23/1992	117	150	1233	1266	1300
8/24/1992	64	150	1110	1196	1300
8/25/1992	30	150	1054	1174	1300
8/26/1992	77	150	1132	1205	1300
8/27/1992	91	122	1269	1300	1300
4/1/1992	187	118	937	937	1800
4/2/1992	236	166	973	973	1800
4/3/1992	411	341	1544	1544	1800
4/4/1992	414	344	1624	1624	1800
4/5/1992	368	298	1665	1665	1800

*Simulated Results using FERC 2494 Bypass MIFs

[1] These flows are similar to those obtained using the old flow augmentation plan. A discrepancy arises in April due to the difference in bypass reach flows resulting from the 250 cfs ensured by PSE.

The release of water from Lake Tapps Reservoir under a mean daily evaluation is determined using the priorities outlined above and the new FAP. On a mean daily basis, a potential MIF excursion is evaluated using the first 12 hours of streamflow data. Flow augmentation is then released in the second half of the day. Depending on the reservoir elevation and flows in the Puyallup River, there are four potential scenarios for releases from the Lake Tapps tailrace under the new FAP:

Scenario 1. Hydropower only: The Lake Tapps Reservoir water surface elevation is at the rule curve and the amount of water released based on this rule curve is enough to maintain the average daily flow at the Puyallup River greater than the MIF requirement.
Scenario 2. Hydropower and Avoidance Water: The Lake Tapps Reservoir water surface elevation is at the rule curve, but the amount of water released for hydropower is not enough to bring the average daily flow at the Puyallup River greater than the MIF requirement. In this case water is first released for avoidance and this water is enough to bring the average daily flow at the Puyallup River greater than the MIF.
Scenario 3. Avoidance Only: The Lake Tapps Reservoir water surface elevation and incoming flows are such that no water is available for hydropower production. However, flows at the Puyallup River gage are less than the MIF requirements so Avoidance water is released. This release brings the average daily flow to the MIF requirement.
Scenario 4. Avoidance & Hydropower below rule curve: Similar to scenario 3 except that flows from Avoidance Water are also not enough to meet the MIFs on an average daily basis and the flows are below baseline. In this case, additional water is released to meet baseline conditions by changing the reservoir priorities to replicate baseline conditions. The average daily streamflow at the Puyallup River in this case may not equal the MIF requirement, but it will equal the average daily streamflow for the baseline condition without the water supply project.

A release pattern is assumed in this analysis for illustrative purposes. Hypothetical release patterns for these four scenarios using the average daily flow augmentation plan are shown in the in Figures 1-4. These figures show the tailrace releases and Puyallup River flows using the daily plan in the dashed line and the releases using the hourly plan, which will be discussed later, in the solid line. Each figure is based on a two peak pattern for hydropower release. If enough water is available, a first peak will occur in early morning and a second in late afternoon. The duration of each peak is based on incoming flows and target elevations. The peaks may be reduced to one or no peaks if little water is available. The release pattern shown in these figures is only representative of one of the alternative hourly release patterns and is used for illustrative purposes only. A four hour travel time from the tailrace canal to the Puyallup River gage is assumed for this schematic. The assumptions used in the preparation of each of the figures are shown on the schematic.

In Figure 1, water is released for hydropower generation only (Scenario 1) in a two peak pattern. No flow augmentation water is released since the average daily flows at the Puyallup River gage based on the predicted hydropower release and the bypass and Puyallup River above the confluence flows are greater than the MIF requirement. Figure 2 shows an example of Scenario 2. In this figure, only a small amount of water is available for hydropower production and it will be released in the afternoon peak. After the first 12 hours of streamflow data were evaluated, it was shown that the

average daily Puyallup River flows may be less than the MIF requirement. As a result, avoidance water is also released in the second half of the day to meet the MIF on an average daily basis.

In Figure 3 (Scenario 3), no water is available for hydropower production, but after evaluation of the first 12 hours it is determined additional water is needed to meet the MIFs at the Puyallup River on an average daily basis. This water is released in the second half of the day, and only 2400 AF (100cfs) is required to bring the average daily flow up to the MIF requirement. In Figure 4 (Scenario 4), no water is available for release based on the rule curve. Release of water for Avoidance as well as for hydropower (due to low flow conditions) is needed to maintain the flow in the Puyallup River at the baseline condition (no water supply project).

Evaluation on an Hourly Basis
On an hourly basis avoidance water is released immediately from Lake Tapps Reservoir. It is important to note that the same average daily flow is released and maintained under the hourly evaluation as the average daily basis, but water is spread out differently through out the day. This change improves Puyallup River flows so that they are closer to MIFs while not impacting any of the lake level results as presented in TM 16 *Lake Tapps System Model and Reservoir Management Plan.*

MIF excursions will be predicted on an hourly basis and avoidance water will be released throughout the day at an even flow rate of either the amount withdrawn for water supply or the amount needed to meet MIF, whichever is less. The amount of water released under these two conditions will in effect be the same because the hourly plan reduces the peaking potential.

To illustrate this point, Figures 1-4 also include the releases for the hourly plan. Under each of these scenarios, the same amount of water is released under the daily and hourly plans, but the water is proportioned differently throughout the day. Under the hourly plan, the peaking capacity of the facility is reduced and is released as avoidance water on an hourly basis. This hourly release increases Puyallup River streamflows so that MIFs are more likely to be met on an hourly basis. It is important to note that the total amount of water released from Lake Tapps Reservoir will stay the same and the average daily streamflow at the Puyallup River gage will stay the same. However, even though the total amount of water released stays the same, the amount of water that is considered Avoidance water does not. Avoidance water will increase because water that was previously released purely for hydropower under Scenario 1 is now moved from the generating peak and spread throughout the day into avoidance water (See Figure 1).

Impacts of the New FAP on Previous Modeling Results
Only minor changes are expected with the change from the old to the new FAP. The new FAP only impacts modeling results reported in TM 16 *Lake Tapps System Model and Reservoir Management Plan* during February through April when the bypass reach flows have been increased. During other times of the year, the reservoir is operated in a similar fashion as under the old FAP. Water is still released for hydropower and Avoidance. Any additional water needed to meet the baseline flows in the Puyallup River without the water supply project is released under low flow conditions when hydropower is given priority over recreation. As a result, the flows under the new plan will always be equal to or greater than the flows without the water supply project when they are less than the MIF requirements.

The change in bypass reach flows will cause some minor changes in the modeling results. The increase in flows in February through April will potentially cause a decrease in Lake Tapps Reservoir water surface elevation. However, the impacts to elevations during this time period are negligible since it would not occur during the summer recreational months and the reservoir has ample time to refill by the Memorial Day Recreation full pool target. The impacts to reservoir elevations for summer months presented in TM 16 *Lake Tapps System Model and Reservoir Management Plan* are still applicable for the new FAP. The Puyallup River streamflows results presented in TM 16 *Lake Tapps System Model and Reservoir Management Plan* will also be applicable except for the February to April period when they will increase due to the higher bypass flows. Since only minor changes are expected with the implementation of the new FAP, the modeling results presented in TM 16 *Lake Tapps System Model and Reservoir Management Plan* are still applicable.

Similarly, no changes are expected with the implementation of the hourly FAP. The hourly plan will not cause any additional impacts to the Lake Tapps Reservoir water surface elevation since no additional water is required under the hourly plan. Impacts on lake levels under an hourly evaluation can be represented by the water surface elevation results presented in TM 16 *Lake Tapps System Model and Reservoir Management Plan* Appendix D[2].

[2] Lake Tapps Reservoir elevations under the hourly plan are not accurately represented by the preliminary draft analysis performed by Aspect Consulting (Owen Reese, electronic correspondence, April 23, 2003). This analysis is now outdated since it was performed using an older version of the Flow Augmentation Plan that included Enhancement Water. It was completed using the daily Lake Tapps System Model to estimate hourly flow augmentation volumes using a constant relationship developed from historical data provided in TM 17 Addendum. Based on the analysis, Reese concluded that the hourly Flow Augmentation Plan under most conditions slightly increases the magnitude and frequency of periods of drawdown from the Lake Tapps Reservoir rule curve. However, given an extreme sequence of flows, Reese concluded that the hourly plan could increase the impact on recreation for both normal and drought conditions. The TM 17 Addendum included a comparison of hourly and daily flow augmentation volumes using historical data (Tables 5-1 and 5-2). This analysis calculated the additional water that would be required to meet the MIF using hourly and mean daily Puyallup River streamflows for 1998 and 2001. By using the historical data, the hourly analysis presented in TM 17 Addendum assumed PSE would maintain its ability to generate power at the same capacity while also releasing additional water during non-peaking periods to meet hourly MIFs. However, as described in this memo, releases for power generation are controlled by the rule curve. Power generation is the last priority except under low flow conditions. As a result, if reservoir levels were below target, the peaking volumes will be readjusted. Therefore, the average ratio of the daily and hourly flow augmentation volumes (1.58) presented in TM 17 Addendum and used by Reese in the preliminary draft analysis on lake levels substantially over-estimates the potential impacts of the hourly flow augmentation on lake elevations.

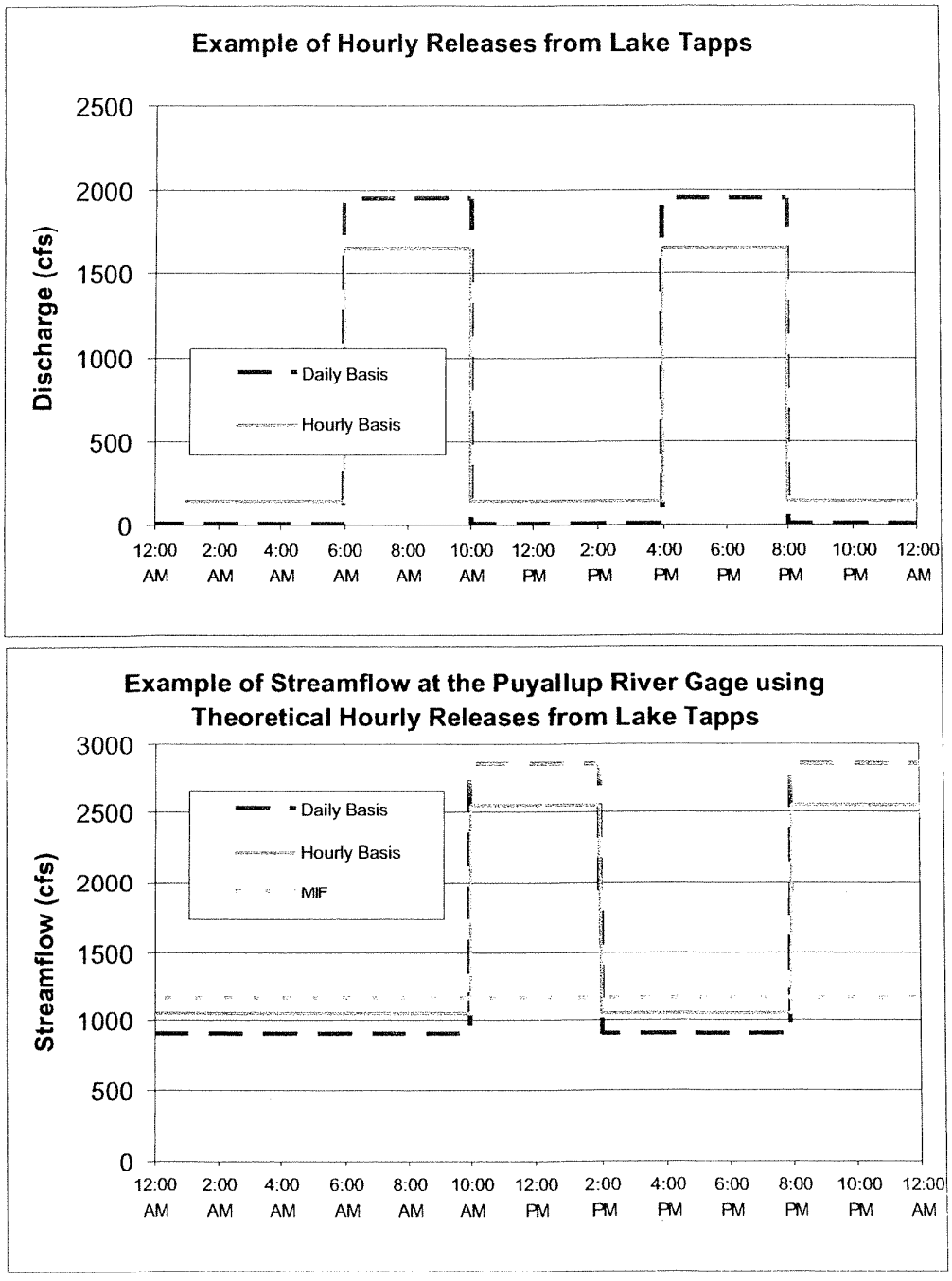
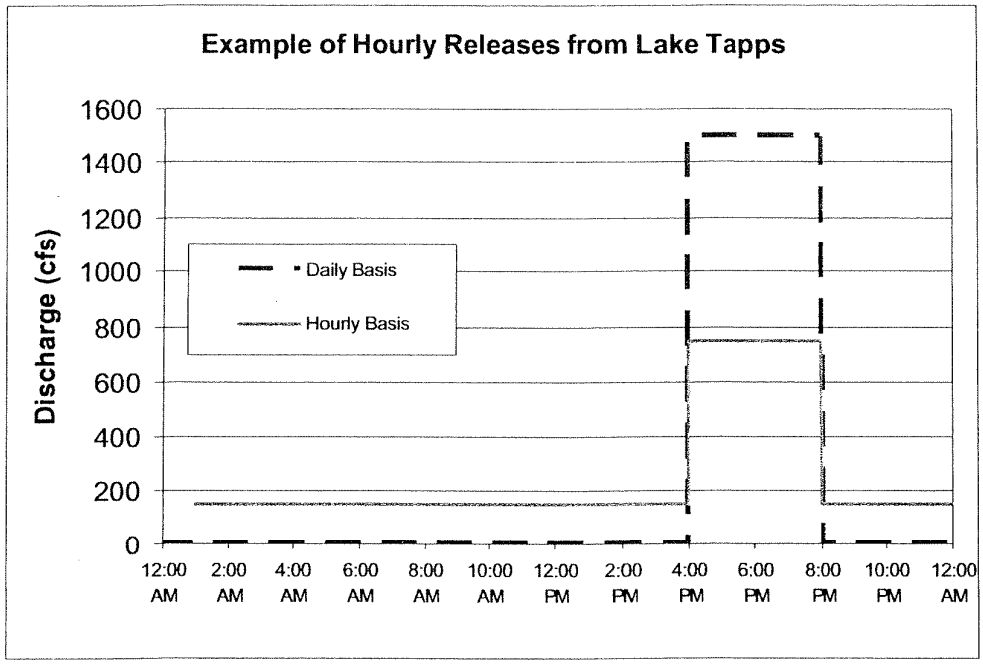


Figure 1: Comparison of the Daily and Hourly Plans for Scenario 1, Tailrace Release is for Hydropower Purposes Only



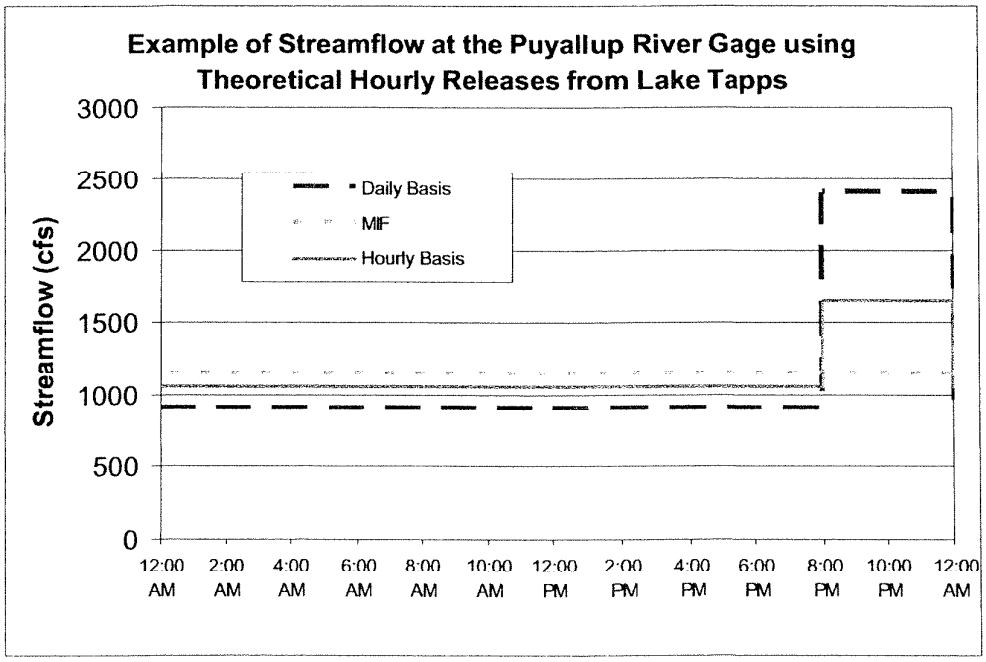


Figure 2: Comparison of the Daily and Hourly Plans for Scenario 2, Tailrace Release is for Hydropower and Avoidance Water

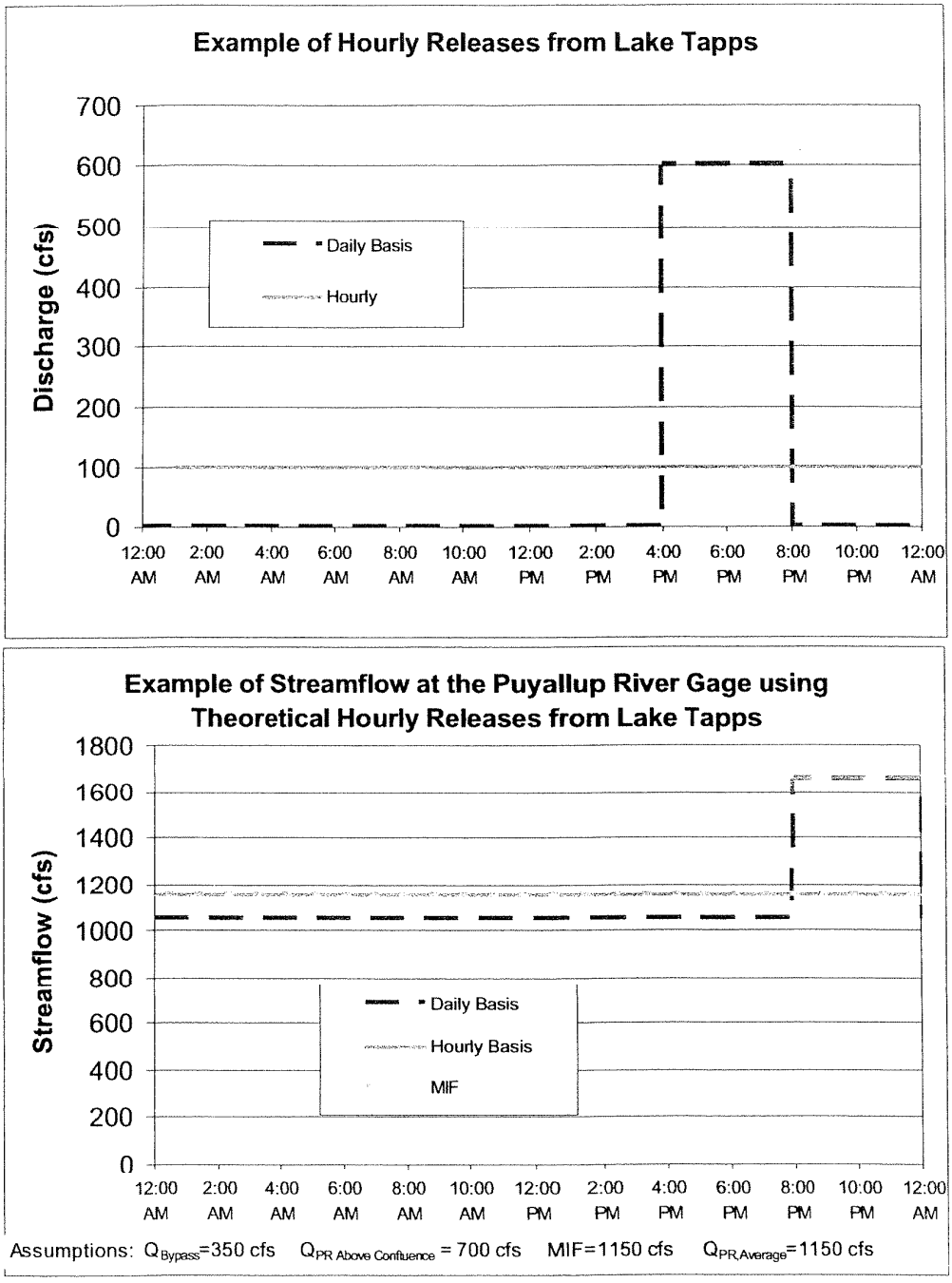
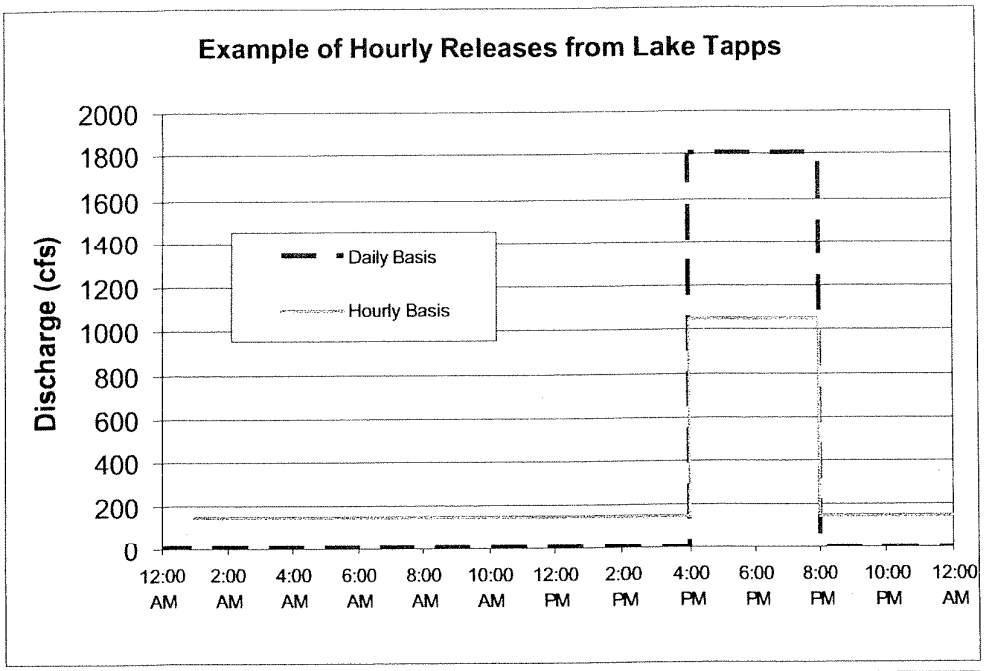


Figure 3: Comparison of the Daily and Hourly Plans for Scenario 3, Tailrace Release is for Avoidance Water Only.



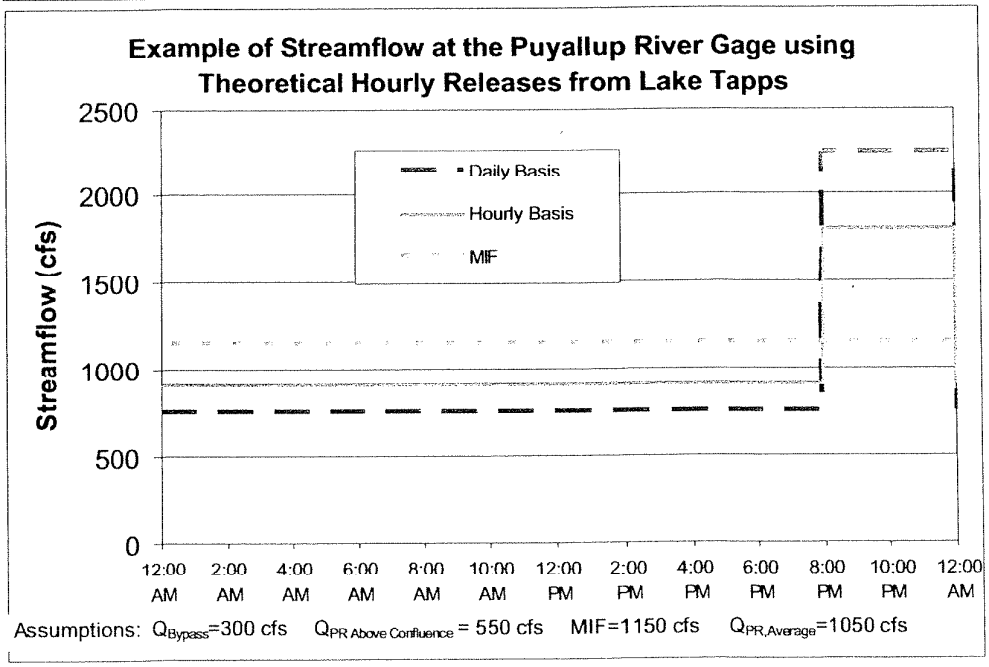


Figure 4: Comparison of the Daily and Hourly Plans for Scenario 4, Tailrace Release is for all Components of the Flow Augmentation Plan.

SOURCE EXCHANGE PROGRAM
APPLICATIONS FOR WATER RIGHTS
No. S2-29920, No. S2-29934 and No. R2-29935

June 13, 2003

Source Exchange Program

The permit holder will develop and construct the Project in accordance with the Development Schedule, to provide up to 16 mgd peak supply (QI) and a total annual volume (QA) of 11,000 acre feet (AF) solely for a Source Exchange Program (the Program). The objective of the Program is to maximize the overall biological benefit to endangered or impaired fisheries from use of Program Water. Program Water will be used only to replace supplies for public water systems whose normal supply adversely impacts the Priority Surface Waters and will not be available to serve growth or to increase a utilities normal water supply.

1. Priority Surface Waters and Source Exchange Program

   a. No later than 5 years prior to the commencement of use of water under the permit, the permit holder shall contribute $150,000 (2003 dollars) to Ecology to be used exclusively to conduct a study for purpose of identifying and ranking by order of biological need Priority Surface Waters within the place of use of the permit that require instream flows/levels to be increased to achieve healthy harvestable fish runs. The scope of the study shall be jointly developed by Ecology and the permit holder; however, Ecology may make final determinations as to the scope of the study in the event of a disagreement. Such study shall identify the likely periods of time, levels of flow and other conditions that will maximize biological benefit to endangered or impaired fisheries. Such study shall be done in consultation with the permit holder and utilize to the extent appropriate any assistance or information that may be available from WDFW and the Central Puget Sound Regional Water Resource Management Program. To the extent that funds are left over, Ecology shall apply the remaining funds solely to its evaluation of the Program developed under subsection b below or modifications of the Program developed pursuant to subsection b or section 4 below.

   b. Within one year of receipt of Ecology's designation of Priority Surface Waters within the place of use of the permit, the permit holder shall prepare and submit to Ecology a Program for review and acceptance or modification consistent with the terms of these provisions. Prior to any modification Ecology shall consult with the permit holder. If Ecology does not accept the Program, or requests modifications to the Program that are unacceptable to the permit holder, the parties will act in good faith to resolve their differences. If necessary the parties will submit their differences to a third party agreed upon by the parties to issue a binding decision. The Program shall include identification of utilities that otherwise are expected to receive water under the permit that withdraw water from an aquifer that is in significant hydraulic continuity with a Priority Surface Water or diverts from a surface water that influences flow in a Priority Surface Water. Wells and surface water diversions of the identified utilities shall be grouped by the extent to which modified use or non-use of such wells or diversions would likely produce biological benefits during times that flows are insufficient and, based on the results of the Ecology study, identify flow levels, periods of time, or other conditions which would indicate that source exchange could provide biological benefits relative to normal operation of those wells or diversions. Lack of infrastructure and the costs and timing of building any needed infrastructure may be factored into the grouping.

In the event the permit holder implements a source exchange project with a utility expected to receive water under the permit prior to water being put to use under the permit, continuation of that project shall be considered use of Program Water.

The Program may also contain provision for utilities within the place of use identified in the permit to participate in the Program through a Source Exchange Contract with the permit holder.

2. Volume Commitment and Schedule

a. Program Water will be available during the first full year water is put to use under the permit or the first full year following Ecology's acceptance of the Program, whichever is later, and will be used as follows:

i. In Phase I, up to 8-mgd peak supply (QI) or a total annual volume (QA) of 4500 AF shall be made available for source exchange. Within this QA limit, during Phase I the permit holder shall achieve a minimum level of actual source exchange at the lesser of 4 mgd peak supply for utilities within the place of use identified in the permit or the level of need identified in the Program for peak supply of utilities that are otherwise expected to receive water under the permit in that calendar year. Source exchange water shall be provided based upon the priority of wells and surface water sources set forth in the Source Exchange Program in order to maximize biological benefits.

ii. Following the completion of construction of Phase II, up to 16-mgd peak supply (QI) or a total annual volume (QA) of 11,000 AF shall be available for source exchange. Within this QA limit, upon the commencement of Phase II, the permit holder shall thereafter achieve a minimum level of actual source exchange at the lesser of 8-mgd peak supply for utilities within the place of use identified in the permit or the level of need identified in the Program for peak supply of utilities that are otherwise expected to receive water under the permit in that calendar year. Source exchange water shall be provided based upon the priority of wells and surface water sources set forth in the Source Exchange Program in order to maximize biological benefits.

iii. If the minimum peak supply source exchange levels required in paragraphs i. and ii. above are not met for the preceding calendar year, the permit holder may not in the subsequent year further increase the instantaneous (QI) or annual use (QA) of water for public water supply (excluding source exchange) beyond the highest levels of instantaneous or annual use for public water supply achieved under the permit in a year in which the minimum source exchange levels were met. This provision does not limit any authority Ecology may have to authorize use of additional water for public waster supply or to issue penalties or seek injunctive or any other available relief to enforce these provisions or other provisions of the permit.

b. Program Water (11,000 AF annually) will be "reserved" for the Program.

c. During the superceding permit process as described in the Development Schedule, Ecology may review and adjust the quantities committed to the Program, although the maximum quantities available and minimum levels of use stated above in paragraph 2.a shall not be increased.

3. Reporting

By March 31 following the first year in which Program Water is utilized (and annually thereafter), the permit holder shall provide a report to Ecology that includes:

(a) Program status, including compliance with commitments in prior calendar year, participants, wells/surface waters affected, quantities and periods of well and surface water use avoided, etc.;

(b) Evaluation of Program success in providing maximum biological benefits; and

(c) Recommendations for modifications to the Program.

4. Modification of the Program

In addition to the annual report, the permit holder may at any time submit to Ecology written recommendations for modification of the Program. Ecology shall review any recommended modifications to the Program and accept, deny, or modify upon consultation such recommendations within 90 days of receipt thereof. Ecology may initiate any modifications to the program after written notice to and consultation with the permit holder, if Ecology determines that such modifications are necessary to fully implement the above provisions. If Ecology denies, or amends the recommended modifications in a manner that is unacceptable to the permit holder, the parties will act in good faith to resolve their differences. If necessary the parties will submit their differences to a third party agreed upon by the parties to issue a binding decision.

Attachment 2

MEMORANDUM

PUGET SOUND ENERGY

DATE: June 24, 2003

TO: Tom McDonald, Perkins Coie

FROM: Paul Wetherbee, PSE

SUBJECT: Summary of elements of water supply project to meet instream flow conditions in the lower Puyallup River

Per your email on June 18, 2003, this memorandum summarizes the new proposed Flow Augmentation Plan (FAP) and Reservoir Management Plan (RMP) that ensures the proposed water supply project meets instream flow criteria defined in WAC.

In consideration of the Lake Tapps Reservoir Water Right, and consistent with the technical documentation provided by Puget Sound Energy (PSE) in response to the Preliminary Permit (April 30, 2002), the FAP and Reservoir operations are designed so the water supply project cannot create or exacerbate violations of minimum instream flows (MIFs) at the Puyallup River at Puyallup gage compared to operation of the reservoir solely for hydropower purposes. As defined in the April 30, 2002 Feasibility Report, a baseline scenario was created based on a theoretical operation of the hydropower project (with FERC license conditions) operating without the water supply project. Hydropower release under this baseline scenario is the quantity of water that would be released within a day if reservoir levels were at the target elevations specified by the reservoir rule curve. As described in *TM 16 Lake Tapps System Model and Reservoir Management Plan*, the Lake Tapps Reservoir rule curve assumed for modeling purposes is consistent with target reservoir levels currently under discussion in the Lake Tapps Task Force (LTTF).

Since the April 30, 2002 submittals, the Department of Ecology (Ecology) has requested that the FAP be applied on an hourly basis to mitigate the impact of the water supply project on the Puyallup River when its flows are below minimum instream flow (MIF). As explained and illustrated in the June 12 memorandum, the FAP provides the same amount of water on an hourly and daily basis by redistributing the reservoir releases over the day.

The new FAP consists of the following elements:

1. **PSE will operate the White River diversion to ensure flows of 250 cfs** in the bypass reach from February through April. This component of the FAP addresses Ecology's concerns with water quality in the bypass reach.
2. **Avoidance Water** releases water on an hourly basis to mitigate potential impacts related to water supply when Puyallup River streamflow is below the MIF. When a MIF excursion is anticipated to occur at the Puyallup River gage, Avoidance Water is released up to the amount of water withdrawn from the reservoir for water supply or to the amount of water needed to meet the MIF, which ever is less. Prior to implementation of the FAP, a trigger mechanism will be developed to predict flows in the Puyallup River several hours ahead of time.

Consistent with the April 30, 2002 Feasibility Report, PSE will operate the reservoir such that the FAP has maximum benefit on downstream flows by making several adjustments to the RMP under specific conditions. If Avoidance Water is triggered under the FAP *and* the maximum amount of Avoidance Water is applied *and* instream flows at the Puyallup River at Puyallup gage are still below MIF, the following adjustments to the RMP apply:

1. During the summer recreation season, if the reservoir water surface elevation is below target levels established by the LTTF, PSE will not increase reservoir storage.
2. During the winter period when reservoir levels are drawn down, PSE will not increase reservoir storage.
3. During the spring refill period, PSE will not increase reservoir storage at a rate greater than that necessary to meet target summer recreational levels established by the LTTF.

Cc: Ed Schild, Puget Sound Energy

WASHINGTON STATE POLLUTION CONTROL HEARINGS BOARD
ENVIRONMENTAL HEARINGS OFFICE
4224 - 6th Avenue SE, Rowe Six, Bldg. 2
PO Box 40903
Lacey, Washington 98504-0903
(360)459-6327 Fax: (360)438-7699
Web Address: http://www.eho.wa.gov
E-Mail: EHO@EHO.WA.GOV

"Your Right to Be Heard"

This is your informal guide to your rights and responsibilities in an appeal. It is not exclusive and **does not have force and effect of state law or regulation.** ALTERNATE FORMAT AVAILABLE UPON REQUEST. More detailed information, in a chapter of the Washington Administrative Code entitled, "Rules of Practice and Procedure of the Pollution Control Hearings Board, WAC 371-08," is available at your county law library or upon request.

YOUR RIGHT TO BE HEARD

The Pollution Control Hearings Board (PCHB) hears appeals from orders and decisions made by:

1. Local and regional air pollution control agencies or authorities.
2. The State Department of Ecology, and
3. Other agencies as provided by law.

The Board's sole function is to give you, and all other litigants in the matter, a full and complete public hearing, as promptly as possible, followed by a fair and impartial written decision based on the facts and law.

The Board is not affiliated with Department of Ecology or any other agency. To insure the Board's impartiality, the state Legislature created this independent, quasi-judicial state agency entirely separate from any other state, regional or local unit of government.

The Board consists of three full-time members, who are appointed by the governor and confirmed by the State Senate for staggered six-year terms. One of the three must be an attorney. All are salaried employees of the State, who also serve on the Shorelines Hearings Board.

DO YOU NEED AN ATTORNEY?

You may be represented by an attorney, but one is not required by law. However, you might want to consider whether a lawyer would be helpful, before you decide to represent yourself.

WHEN & WHERE TO FILE AN APPEAL

The Board must RECEIVE your appeal within 30 days of the date that the copy of the order or decision was communicated to the appealing party.

You must also serve, within 30 days, a copy of your appeal with the Department or Air Pollution Authority or other agency whose order or decision you are appealing.

If it a permit you are appealing, such as a water right, you should also serve a copy of your appeal on the holder of the permit unless you are the permittees.

Failure to observe the thirty (30) day deadline for filing with the Board and serving the Department or Air Pollution Control Authority or other agency will result in dismissal of the appeal.

CONTENT OF THE APPEAL

You need to supply the Board, in writing, with:

Your name and address (mailing and legal, if different) and, if applicable, the name and address of your representative.
A daytime phone number.
A copy of the order or decision you are appealing, and if the order or decision followed an application, a copy of the application.
A brief statement why you are appealing.
The relief you seek (what you want the Board to do).
A statement, signed by you or your representative, attesting that the content of the appeal is true.

IF YOU ARE NOT AN APPELLANT

Perhaps you have been granted a permit by the Department of Ecology, air authority or another agency, but another party has appealed. You have a right to defend the permit and are automatically a respondent in the appeal before the Board. All subsequent sections in this publication apply to you as well as to the appellant.

HEARING DATES

When an appeal is filed, the Board will assign and notify you of a date, time, and location for hearing the case.

THE PRE-HEARING CONFERENCE

Soon after the appeal is filed, a date and place for the pre-hearing conference are selected. It is usually held within 6 weeks. The conference has two main purposes: to help reach a settlement, and to prepare the case for hearing if settlement is not reached. The parties should come to the conference prepared to present a preliminary list of legal issues, proposed witnesses and exhibits.

CAN THIS DISPUTE BE SETTLED?

Litigation is time and energy consuming for the parties. Each party needs to think about possible compromise. For settlement to be reached, each side needs to offer something. Litigants are encouraged to begin settlement talks, without waiting for Board participation.

The Board has a mediation program to assist parties in reaching settlement. If the parties settle, a written document containing the settlement terms will ultimately be signed by all, and filed with the Board, which may decide to dismiss the appeal if the settlement conforms to the law.

BEFORE THE HEARING

Before the hearing you will want to prepare. You have the right to review the agency's file of their decision. Contact them to arrange a time and place to see the file.

You and the other litigants have the right to find out in advance what witnesses and other evidence will be used at the hearing. This may be provided to you without formal procedures, such as by looking at public records. If done formally, this is known as **discovery** and is best accomplished with the assistance of a lawyer. Examples of formal discovery are: **Deposition**-questioning witnesses before the hearing, under oath with a court reporter present. **Interrogatory**-presenting written questions to the other side. There are formal rules that apply to discovery.

HEARING

At the hearing, it is important to be **on time**. An appellant's failure to appear may result in dismissal of the appeal.

The second thing to do is **relax**. You will have your full opportunity to tell your side of the case, but there is a court procedure to be followed, so that all sides can be heard in an orderly manner.

The Presiding Officer for the Board manages the proceedings. A court reporter will record what is said. The appellant usually has the obligation to present his or her case first. Then, the respondents will present their case.

Each side has the right to make an **opening statement**, briefly outlining what its evidence will be. **Witnesses** who are sworn to tell the truth, testify from their personal knowledge in response to questions. After **direct** testimony, the witness answers questions asked by the other side during "**cross-examination**". The Board members may also ask questions.

Persons essential to your case need to be present at the hearing to testify as witnesses, as the "hearsay" rule prevents you from testifying for them.

Exhibits, such as letters, maps, etc. may be offered as evidence. Before the hearing, number your exhibits and prepare an exhibit list. At the hearing, you will need to have the original and copies for each member of the Board, and for the other parties.

After all the evidence has been presented, litigants can summarize their arguments in closing statements.

THE BOARD'S DECISION

The Board will deliberate on the testimony, exhibits, and final arguments, before issuing a written decision.

The written decision called "Findings of Fact, Conclusions of Law and Order" is prepared and mailed to all litigants generally within ninety (90) days.

YOU MAY APPEAL THE FINAL ORDER

The Board's decision may be appealed to Superior Court within thirty (30) days from the date of the **ORDER**, or you may file a petition with the Board for a reconsideration within ten (10) days of the date of the **ORDER**

FREQUENTLY USED TERMS

BOARD: The Washington State Pollution Control Hearings Board.

DEPARTMENT: The Washington State Department of Ecology (DOE).

PERSON OR PERSONS: A citizen, a business firm, an association or a government agency.

APPEAL: A request for review of a decision filed with the Board.

APPELLANT: A person or persons bringing the appeal.

RESPONDENT: A person or entity on the other side of the dispute.

LITIGANTS: All parties to the action.

STIPULATION: An agreement by the parties.

MITIGATED: Reducing, diminishing or lessening either the penalty or the impact of the proposed action.

AIR POLLUTION CONTROL AUTHORITY: a local or regional agency authorized under the Washington Clean Air Act, RCW 70.94, to issue orders and assess penalties for air pollution violations, and to issue notices of construction for new air emission sources.

The Environmental Hearings Office does not discriminate in employment or any of its services against persons with disabilities, and will make reasonable accommodations for any citizen who needs assistance to participate in our hearings or other activities.

Judy/Office/PCHBPAMP 10/07/02

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

June 30, 2003

CERTIFIED MAIL

Puget Sound Energy Inc
PO Box 97034 Mailstop OBC-14N
Bellevue WA 98009-9734

Dear Sir or Madame:

Re: Surface Water Application No. S2-29920

Your application has been approved. A permit will be issued after the required 30-day appeal period and upon payment of the statutory fee. Enclosed is the Report of Examination summarizing our findings and recommendations.

Please send your permit fee of $2000.00 within thirty (30) days. Make your check payable to the Department of Ecology.

This order may be appealed. Your appeal must be filed with the Pollution Control Hearings Board, PO Box 40903, Olympia, WA 98504-0903 within thirty (30) days of the date this decision was mailed. At the same time your appeal must be sent to the Department of Ecology c/o Water Resources Appeal Coordinator, PO Box 47600, Olympia, WA 98504-7600. Your appeal alone will not stay the effectiveness of the Order. These procedures are consistent with Chapter 43.21B RCW.

Sincerely,

Thomas Loranger

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

TL:th (exam2)
Enclosure

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☒ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☐ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
June 20, 2002	S2-29920		

NAME
Puget Sound Energy Inc

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 97034 Mailstop OBC-14N	Bellevue	Washington	98009-9734

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
White River

TRIBUTARY OF (IF SURFACE WATERS)
Puyallup River

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
2000		72400

QUANTITY, TYPE OF USE, PERIOD OF USE
72400 Acre-feet per year — Public Water Supply Flow Augmentation, Recreation (Including Industrial & Commercial) — Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
200 feet East and 200 feet South from the North quarter corner of Section 2.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼	2	19	6E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The POU includes all King County UGA's and Utility Service Areas identified in the Central Puget Sound Regional Water Supply Outlook (Outlook), the Pierce County UGA's and Utility Service Areas in the Outlook except the Cities of Dupont, Eatonville, Roy, the Fort Lewis and McChord military bases, and the McKenna, Southwood, Graham Hill, Eldorado, and Chinook water systems. The POU also includes the Olympic View Water District in Snohomish County that is partially supplied by the Seattle Public Utilities (SPU) and the Gig Harbor peninsula.

DESCRIPTION OF PROPOSED WORKS

Lake Tapps Water Supply Project.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
December 31, 2016	December 31, 2024	December 31, 2053

REPORT

BACKGROUND:

Puget Sound Energy (PSE) has submitted three water right applications to the Washington State Department of Ecology (Ecology) for the purposes of developing a public water supply project to provide municipal water supply including industrial and commercial purposes.

1. In Surface Water Application S2-29920 (filed on June 20, 2000) the applicant proposes to divert 2,000 cfs, 72,400 af/y of water from the White River for the public water supply, using the existing diversion for the White River hydroelectric project. The applicant states that the total combined diversion of water from the White River for the project and the WSP would not exceed 2,000 cfs under any circumstances, which is the current level of diversion under the hydropower project.
2. In Reservoir application R2-29935 (filed September 15, 2000) the applicant seeks a reservoir permit to store in Lake Tapps up to 72,400 ac/y of water that would be diverted from the river at a rate of 2,000 cfs, pursuant to application S2-29920.
3. In Surface Water Application S2-29934 (filed September 15, 2000) the applicant seeks a secondary permit to divert 72,400 af/y of water stored in Lake Tapps under R2-29935 for consumptive use as a municipal, commercial, and industrial water supply. Such diversion is proposed to occur at a peak rate of 150 cfs and a daily average 100 cfs. Under the proposal, water would be diverted for water supply from the forebay of the hydropower project. Water would then be treated and transmitted into a regional distribution system.

This *Report of Examination* addresses surface water application S2-29920 to divert water from The White River for the proposed water supply project associated with the Lake Tapps Reservoir. The ultimate application of this water to beneficial use is authorized under secondary Permit No. S2-29934. The investigative report for No. S2-29934 describes the beneficial use conditions of the water right. Report of Examination S2-29934 also includes a complete description of the project, protestant's concerns, and evaluation of the proponent's mitigation proposal.

INVESTIGATION:

The project site is located within the Puyallup-White River Watershed, Water Resource Inventory Area (WRIA) 10. The proposed water supply project would be located with, and use much of the existing infrastructure of PSE's White River Hydroelectric Project. The existing White River Hydroelectric Project diverts water from the White River at river mile 24.3 near the town of Buckley. Diverted water travels through the existing eight mile long diversion flowline consisting of flumes, canals, fish screens, five settling basins, and pipelines.

Diverted water is then stored in Lake Tapps Reservoir, a manmade reservoir consisting of 13 dikes impounding water in natural topography that once held four small lakes. Lake Tapps has a surface area of 2,700 acres and active storage capacity of 46,700 acre-feet. Water surface elevations can range from a normal maximum of 543 feet above mean sea level (ft msl) to a minimum of 515 ft msl, which corresponds with the bottom of the outlet works.

The main outlet from Lake Tapps is the 12-foot diameter concrete tunnel leading to the forebay, penstocks, and ultimately powerhouse and turbines of the White River Hydroelectric project.

After water is released from the turbines it flows through a 0.5-mile long tailrace canal into the White River. The reach of the White River between the diversion dam at RM 24.3 and the tailrace at RM 3.6 is referred to as the Bypass Reach.

Downstream of the confluence the tailrace and White River, the White River continues for 3.6 miles before joining the Puyallup River; this reach of the White River is referred to in this Report of Examination (ROE) as the lower White River. Below the confluence with the White River, the Puyallup River continues for 10.4 miles before entering Commencement Bay in Tacoma.

Current Water Right Authorization

The applicant currently diverts water from the White River and impounds it in Lake Tapps Reservoir for hydropower production. The applicant's water right for hydropower is evidenced by claims filed in 1895 and 1901. In 1974 PSE filed Claim No. 160822 with the State under Ch. 90.14 RCW confirming PSE's interest to protect and utilize the water right for 2,000 cfs and 1,440,000 acre-feet/year.

This new permit will utilize the same diversion point and same Lake Tapps Reservoir impoundment, and will not divert or impound any more water than is currently diverted and impounded under the hydropower right.

Puget Sound Energy has applied for a hydro power license from the Federal Energy Regulatory Commission (FERC). The license will provide conditions for operation of the diversion of water for hydropower purposes, including instream flow conditions for the by-pass reach of the White River. The quantity of water diverted for this permit will be affected by these conditions.

Puget Sound Energy has agreed to operate the diversion dam to meet the new instream flow conditions required under the FERC license. Furthermore, regardless of the flows required in the FERC license, Puget Sound Energy has agreed to exercise the permit in a manner that will not divert water from the White River if minimum flows of 250 cfs are not met between February 1st and April 30th of each year.

Diversion Dam and Intake

The existing diversion dam for the hydropower water right is located at White River Mile 24.3, in the City of Buckley, and is an 11-foot-high structure consisting of a concrete and rock filled crib structure 352 feet long, with a 4 foot high and 7-foot-high flashboards on top of the crib structure. The spillway extends the entire length of the dam. The flashboard system normally raises the water level 7 feet above the crib structure to elevation 671 feet mean sea level (ft msl).

The concrete intake is located just upstream of the dam on the left bank of the White River, and contains two stony gates, each 13 feet high by 15.5 feet wide, separated by a concrete pier. The rack gearing is motor operated, with an emergency 4 horsepower gasoline engine drive. There is also a manual means of lowering the gates if both of the other systems fail.

The existing eight-mile-long diversion flowline consists of a series of flumes and canals lined with wood, concrete, or earth, five settling basins, and two 10-foot diameter pipelines.

A concrete and wood flume conveys water from the headworks to the flowline sedimentation basins over a distance of approximately 5,000 feet with a gradient of 7 feet to the mile. The concrete portion of the flume was constructed in 1986 and runs for approximately 1,700 feet between the headworks and the wood-lined canal. Two rock chutes are located in this section for removal of entrained rocks and gravels; one chute is located adjacent to the headworks and consists of an 80-inch-wide gate with a maximum opening of 3 feet, the other chute is located near the transition of the concrete canal to the wood canal. The flume transitions from concrete to a wood lining for the remaining 3,300 feet. The wood flume is approximately 28 feet wide and 9 feet high with an approximate capacity of 2,000 cfs.

Location of Impounding Structure

This permit will allow utilization of the existing impounding structure of Lake Tapps Reservoir in Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 21, 22, 23, 27 and 28, Township 19 N, Range 5 E.W.M.

The Lake Tapps Reservoirs is impounded by a series of 13 dikes ranging in length from a few hundred to a few thousand feet, and from a height of a few feet up to 40 feet. The reservoir, once a series of four small lakes (Lake Tapps, Lake Kirtley, Crawford Lake, and Church Lake), was created by the construction of the dikes and the diversion of water from the White River into the reservoir. Lake Tapps Reservoir is approximately 4.5 miles long and 2.5 miles wide. The reservoir has an area of 2,700 acres and a storage capacity of 46,700 acre-feet and a normal maximum pool elevation of 543 ft msl.

There are 13 dikes that impound the reservoir. The dikes contain approximately 600,000 cubic yards of material. Documentation developed during the construction of the dikes indicates that the topsoil was first stripped to the impervious strata (till) beneath each dike. Steamrollers were then used to prepare the foundation. Fill material, consisting of cemented gravels obtained from nearby excavations, was transported to the site by dump cars on railway trestles. Large scrapers and donkey engines were then used for placement of the fill. The dikes were then finished using horse-drawn slip scrapers and wheelers. Initial design specifications required that the dikes have a minimum crest width of 40 feet, upstream slopes of 2.5 horizontal to 1 vertical, and downstream slopes of 2 horizontal to 1 vertical.

Legal Description of Property on Which Water Is to Be Used

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Development Schedule

See Development Schedule of Permit No. S2-29934P, incorporated here by reference.

Investigation

The authority for granting a water right for diversion and storage is set forth in RCW 90.03.370, which provides:

> *All applications for reservoir permits shall be subject to the provisions of RCW 90.03.250 to 90.03.320. But the party or parties proposing to apply to a beneficial use for the water stored in any such reservoir shall also file an application for a permit, to be known as the secondary permit which shall be in compliance with the provisions of RCW 90.03.250 to 90.03.320.*

When applying for a reservoir permit, an applicant must give information related to the height of the dam and capacity of the reservoir and the uses to be made of the impounded waters. RCW 90.03.260.

Under WAC 508-12-260, a reservoir permit is required for a reservoir "adjacent to a stream channel when water will be required to fill the reservoir in addition to a constant diversion to keep it full." While Ecology's rules related to requirements for a reservoir permit do not necessarily require a reservoir permit in this instance because "a constant diversion to keep it full" is not required, Puget Sound Energy agreed to file the application for a reservoir permit to confirm that water will hereafter be stored at Lake Tapps Reservoir for municipal, industrial, and commercial purposes, as well as for hydropower under existing claimed rights. Additionally, based on the flow augmentation plan described in the report of examination for the secondary permit No. S2-29934P, the reservoir will also be beneficially used for recreational purposes.

Water right applications for beneficial use of water are required to meet the four-part test as set forth in RCW 90.03.290. This statute requires the Department to investigate the application and issue a permit if it finds that:

(1) there is water available for appropriation,
(2) the use is beneficial,
(3) the proposed appropriation will not impair existing rights, or
(4) be detrimental to the public welfare.

These statements are applicable to the actual appropriation of water to the beneficial use. Therefore, the full definition and full description of the investigation are provided in ROE for permit No. S2-29934.

Water Available

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Beneficial Use

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Impairment of Existing Rights

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Detriment to the Public Interest

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

RECOMMENDATIONS:

It is recommended that Application S2-29920 be approved and a permit issued subject to the provisions below including the development schedule. Permit S2-29920 will authorize the diversion of 2000 cfs instantaneous quantity, not to exceed a withdrawal of 72,400 acre feet per year annual quantity from the White River for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934.

PROVISIONS:

The Development Schedule in the Report of Exam for Permit No. S2-29934P is incorporated here by reference.
The Other Provisions and Conditions in the Report of Exam for Permit No. S2-29934P are incorporated here by reference.
The applicant shall pay permitting fees required for this permit prior to the issuance of the permit.

FINDINGS OF FACT AND DECISION:

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Surface Water Application Number S2-29920, subject to existing rights and the provisions above, to authorize the diversion of 2000 cfs instantaneous quantity, not to exceed a withdrawal of 72,400 acre feet per year annual quantity from the White River for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934. The place of use and point of diversion shall be as specified above.

Signed at Olympia, Washington, this _____ day of _____, 2003.

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

The following page is a scanned copy of the page of the Report of Examination with the date and signature

Detriment to the Public Interest

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

RECOMMENDATIONS:

It is recommended that Application S2-29920 be approved and a permit issued subject to the provisions below including the development schedule. Permit S2-29920 will authorize the diversion of 2000 cfs instantaneous quantity, not to exceed a withdrawal of 72,400 acre feet per year annual quantity from the White River for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934.

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The applicant shall pay permitting fees required for this permit prior to the issuance of the permit.

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Signed at Olympia, Washington, this 30th day of June, 2003.

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

WASHINGTON STATE POLLUTION CONTROL HEARINGS BOARD
ENVIRONMENTAL HEARINGS OFFICE
4224 - 6th Avenue SE, Rowe Six, Bldg. 2
PO Box 40903
Lacey, Washington 98504-0903
(360)459-6327 Fax: (360)438-7699
Web Address: http://www.eho.wa.gov
E-Mail: EHO@EHO.WA.GOV

"Your Right to Be Heard"

This is your informal guide to your rights and responsibilities in an appeal. It is not exclusive and **does not have force and effect of state law or regulation.** ALTERNATE FORMAT AVAILABLE UPON REQUEST. More detailed information, in a chapter of the Washington Administrative Code entitled, "Rules of Practice and Procedure of the Pollution Control Hearings Board, WAC 371-08," is available at your county law library or upon request.

YOUR RIGHT TO BE HEARD

The Pollution Control Hearings Board (PCHB) hears appeals from orders and decisions made by:

1. Local and regional air pollution control agencies or authorities.
2. The State Department of Ecology, and
3. Other agencies as provided by law.

The Board's sole function is to give you, and all other litigants in the matter, a full and complete public hearing, as promptly as possible, followed by a fair and impartial written decision based on the facts and law.

The Board is not affiliated with Department of Ecology or any other agency. To insure the Board's impartiality, the state Legislature created this independent, quasi-judicial state agency entirely separate from any other state, regional or local unit of government.

The Board consists of three full-time members, who are appointed by the governor and confirmed by the State Senate for staggered six-year terms. One of the three must be an attorney. All are salaried employees of the State, who also serve on the Shorelines Hearings Board.

DO YOU NEED AN ATTORNEY?

You may be represented by an attorney, but one is not required by law. However, you might want to consider whether a lawyer would be helpful, before you decide to represent yourself.

WHEN & WHERE TO FILE AN APPEAL

The Board must RECEIVE your appeal within 30 days of the date that the copy of the order or decision was communicated to the appealing party.

You must also serve, within 30 days, a copy of your appeal with the Department or Air Pollution Authority or other agency whose order or decision you are appealing.

If it a permit you are appealing, such as a water right, you should also serve a copy of your appeal on the holder of the permit unless you are the permittees.

Failure to observe the thirty (30) day deadline for filing with the Board and serving the Department or Air Pollution Control Authority or other agency will result in dismissal of the appeal.

CONTENT OF THE APPEAL

You need to supply the Board, in writing, with:

Your name and address (mailing and legal, if different) and, if applicable, the name and address of your representative.
A daytime phone number.
A copy of the order or decision you are appealing, and if the order or decision followed an application, a copy of the application.
A brief statement why you are appealing.
The relief you seek (what you want the Board to do).
A statement, signed by you or your representative, attesting that the content of the appeal is true.

IF YOU ARE NOT AN APPELLANT

Perhaps you have been granted a permit by the Department of Ecology, air authority or another agency, but another party has appealed. You have a right to defend the permit and are automatically a respondent in the appeal before the Board. All subsequent sections in this publication apply to you as well as to the appellant.

HEARING DATES

When an appeal is filed, the Board will assign and notify you of a date, time, and location for hearing the case.

THE PRE-HEARING CONFERENCE

Soon after the appeal is filed, a date and place for the pre-hearing conference are selected. It is usually held within 6 weeks. The conference has two main purposes: to help reach a settlement, and to prepare the case for hearing if settlement is not reached. The parties should come to the conference prepared to present a preliminary list of legal issues, proposed witnesses and exhibits.

CAN THIS DISPUTE BE SETTLED?

Litigation is time and energy consuming for the parties. Each party needs to think about possible compromise. For settlement to be reached, each side needs to offer something. Litigants are encouraged to begin settlement talks, without waiting for Board participation.

The Board has a mediation program to assist parties in reaching settlement. If the parties settle, a written document containing the settlement terms will ultimately be signed by all, and filed with the Board, which may decide to dismiss the appeal if the settlement conforms to the law.

BEFORE THE HEARING

Before the hearing you will want to prepare. You have the right to review the agency's file of their decision. Contact them to arrange a time and place to see the file.

You and the other litigants have the right to find out in advance what witnesses and other evidence will be used at the hearing. This may be provided to you without formal procedures, such as by looking at public records. If done formally, this is known as **discovery** and is best accomplished with the assistance of a lawyer. Examples of formal discovery are: **Deposition**-questioning witnesses before the hearing, under oath with a court reporter present. **Interrogatory**-presenting written questions to the other side. There are formal rules that apply to discovery.

HEARING

At the hearing, it is important to be **on time**. An appellant's failure to appear may result in dismissal of the appeal.

The second thing to do is **relax**. You will have your full opportunity to tell your side of the case, but there is a court procedure to be followed, so that all sides can be heard in an orderly manner.

The Presiding Officer for the Board manages the proceedings. A court reporter will record what is said. The appellant usually has the obligation to present his or her case first. Then, the respondents will present their case.

Each side has the right to make an **opening statement**, briefly outlining what its evidence will be. **Witnesses** who are sworn to tell the truth, testify from their personal knowledge in response to questions. After **direct** testimony, the witness answers questions asked by the other side during "**cross-examination**". The Board members may also ask questions.

Persons essential to your case need to be present at the hearing to testify as witnesses, as the "hearsay" rule prevents you from testifying for them.

Exhibits, such as letters, maps, etc. may be offered as evidence. Before the hearing, number your exhibits and prepare an exhibit list. At the hearing, you will need to have the original and copies for each member of the Board, and for the other parties.

After all the evidence has been presented, litigants can summarize their arguments in closing statements.

THE BOARD'S DECISION

The Board will deliberate on the testimony, exhibits, and final arguments, before issuing a written decision.

The written decision called "Findings of Fact, Conclusions of Law and Order" is prepared and mailed to all litigants generally within ninety (90) days.

YOU MAY APPEAL THE FINAL ORDER

The Board's decision may be appealed to Superior Court within thirty (30) days from the date of the **ORDER**, or you may file a petition with the Board for a reconsideration within ten (10) days of the date of the **ORDER**

FREQUENTLY USED TERMS

BOARD: The Washington State Pollution Control Hearings Board.

DEPARTMENT: The Washington State Department of Ecology (DOE).

PERSON OR PERSONS: A citizen, a business firm, an association or a government agency.

APPEAL: A request for review of a decision filed with the Board.

APPELLANT: A person or persons bringing the appeal.

RESPONDENT: A person or entity on the other side of the dispute.

LITIGANTS: All parties to the action.

STIPULATION: An agreement by the parties.

MITIGATED: Reducing, diminishing or lessening either the penalty or the impact of the proposed action.

AIR POLLUTION CONTROL AUTHORITY: a local or regional agency authorized under the Washington Clean Air Act, RCW 70.94, to issue orders and assess penalties for air pollution violations, and to issue notices of construction for new air emission sources.

The Environmental Hearings Office does not discriminate in employment or any of its services against persons with disabilities, and will make reasonable accommodations for any citizen who needs assistance to participate in our hearings or other activities.

Judy/Office/PCHBPAMP 10/07/02

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

June 30, 2003

CERTIFIED MAIL

Puget Sound Energy Inc
PO Box 97034 Mailstop OBC-14N
Bellevue WA 98009-9734

Dear Sir or Madame:

Re: Reservoir Water Application No. R2-29935

Your application has been approved. A permit will be issued after the required 30-day appeal period and upon payment of the statutory fee. Enclosed is the Report of Examination summarizing our findings and recommendations.

Please send your permit fee of $1448.00 within thirty (30) days. Make your check payable to the Department of Ecology.

This order may be appealed. Your appeal must be filed with the Pollution Control Hearings Board, PO Box 40903, Olympia, WA 98504-0903 within thirty (30) days of the date this decision was mailed. At the same time your appeal must be sent to the Department of Ecology c/o Water Resources Appeal Coordinator, PO Box 47600, Olympia, WA 98504-7600. Your appeal alone will not stay the effectiveness of the Order. These procedures are consistent with Chapter 43.21B RCW.

Sincerely,

Thomas Loranger

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

TL:th (exam2)
Enclosure

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

RESERVOIR
REPORT OF EXAMINATION

TO CONSTRUCT A RESERVOIR AND STORE FOR BENEFICIAL USE
WATERS OF THE STATE OF WASHINGTON

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
September 15, 2002	R2-29935		

NAME
Puget Sound Energy Inc

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 97034 Mailstop OBC-14N	Bellevue	Washington	98009-9734

Note: NOPL means Normal Operating Pool Level

NAME OF STREAM OR OTHER SOURCE FOR RESERVOIR SUPPLY	TRIBUTARY OF (IF SURFACE WATERS)
White River	Puyallup River
NUMBER OF ACRE FEET STORED WHEN RESERVOIR IS FULL	**USE(S) TO BE MADE OF IMPOUNDED WATER**
67000	Public Water Supply Flow Augmentation, Recreation (Including Industrial & Commercial)

LOCATION OF IMPOUNDING STRUCTURE

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)

Dike Number	Location	Washington ID Number
1	NW1/4NW1/4 S9, TWP20N R5E	WA418
2A	NE1/4SE1/4 S5, TWP20N R5E	WA419
2B	NW1/4SW1/4 S4, TWP20N R5E	WA420
3	NE1/4SW1/4 S4, TWP20N R5E	WA421
4	W1/2SE1/4 S4 & NW1/4NE1/4 S9, TWP20N R5E	WA422
4A*	N1/2NE1/4 S9, TWP20N R5E	WA422
5*	NE1/4NE1/4 S9, TWP20N R5E	WA423
6*	SW1/4NW1/4 S10, TWP20N R5E	WA424
7	SW1/4NW1/4 S10, TWP20N R5E	WA425
8	E1/2NW1/4 S10, TWP20N R5E	WA426
9	NE1/4NW1/4 S10, TWP20N R5E	WA427
10	NE1/4NW1/4 & NW1/4NE1/4 S10, TWP20N R5E	WA428
11*	W1/2NE1/4 & SE1/4NE1/4 S10, TWP20N R5E	WA429
12	SE1/4SE1/4 S10, TWP20N R5E	WA430
13	NW1/4SW1/4 S27, TWP20N R5E	WA431
14	NW1/4NE1/4 S26, TWP20N R5E	WA432
15	SE1/4NW1/4 & SW1/4NE1/4 S26, TWP20N R5E	WA433

SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
4, 5, 9, 10, 26, 27	20	5E	10	Pierce

LEGAL SUBDIVISIONS OF LANDS IN WHICH THE SUBMERGED AREA IS TO BE LOCATED
Lake Tapps Reservoir, located in Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 21, 22, 23, 27 and 28, T. 19 N., R. 5 E.W.M.

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED IF DIFFERENT THAN ABOVE

The POU includes all King County UGA's and Utility Service Areas identified in the Central Puget Sound Regional Water Supply Outlook (Outlook), the Pierce County UGA's and Utility Service Areas in the Outlook except the Cities of Dupont, Eatonville, Roy, the Fort Lewis and McChord military bases, and the McKenna, Southwood, Graham Hill, Eldorado, and Chinook water systems. The POU also includes the Olympic View Water District in Snohomish County that is partially supplied by the Seattle Public Utilities (SPU) and the Gig Harbor peninsula.

CONSTRUCTION OF IMPOUNDING STRUCTURE

HEIGHT OF DAM (FEET)	LENGTH ON TOP (FEET)	WIDTH ON TOP (FEET)
Varies 3' - 40'	Varies 200' - 4000'	40'

SLOPE OF FRONT OR WATER SIDE (Number of feet horizontal to one foot vertical):	SLOPE OF BACKSIDE (Number of feet horizontal to one foot vertical):
2.5/1	2/1

HEIGHT OF DAM ABOVE WATER LINE AT NOPL (FEET)	
3 feet	

TYPE OF CONSTRUCTION OF DAM AND CONSTRUCTION MATERIALS

Earthen dikes

LOCATION AND APPROXIMATE DIMENSIONS OF SPILLWAY INCLUDING CREST LENGTH

Not applicable

LOCATION, SIZE AND TYPE OF VALVE AND OUTLET CONDUIT STRUCTURE

The outlet from Lake Tapps is located in the SW¼ NE¼ of Section 8, T. 20 N., R. 5 E.W.M. It consists of a 2842 long 12 foot diameter concrete tunnel that leads to a concrete penstock forebay that is located in the SW¼ NE¼ of Section 7, T. 20 N., R. 5 E.W.M. The water then enters three steel penstocks, 8 feet in diameter, 2135 feet in length that delivers water to the turbines in the powerhouse. Two of the three steel penstocks are tapped to provide water to a fourth 8-foot diameter steel penstock which is 1791 feet in length. Each penstock feeds a Francis turbine. Each of the four turbines discharges water into the plant tailrace. The tailrace is roughly rectangular in cross-section with a width of 34 feet and a containment height of 9 to 10 feet. The tailrace is concrete lined for the first 45 feet and then timber lined for the next 65 feet; the last 2400 feet leading to the White River are unlined.

NUMBER OF ACRES SUBMERGED WHEN RESERVOIR IS FILLED TO NOPL	MAXIMUM DEPTH (FEET) AT NOPL	APPROXIMATE AVERAGE DEPTH (FEET)
27000	90 feet	25 feet

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	December 31, 2053

REPORT

BACKGROUND:

Puget Sound Energy (PSE) has submitted three water right applications to the Washington State Department of Ecology (Ecology) for the purposes of developing a public water supply project to provide municipal water supply including industrial and commercial purposes.

1. In Surface Water Application S2-29920 (filed on June 20, 2000) the applicant proposes to divert 2,000 cfs, 72,400 af/y of water from the White River for the public water supply, using the existing diversion for the White River hydroelectric project. The applicant states that the total combined diversion of water from the White River for the project and the WSP would not exceed 2,000 cfs under any circumstances, which is the current level of diversion under the hydropower project.
2. In Reservoir application R2-29935 (filed September 15, 2000) the applicant seeks a reservoir permit to store in Lake Tapps up to 72,400 ac/y of water that would be diverted from the river at a rate of 2,000 cfs, pursuant to application S2-29920.
3. In Surface Water Application S2-29934 (filed September 15, 2000) the applicant seeks a secondary permit to divert 72,400 af/y of water stored in Lake Tapps under R2-29935 for consumptive use as a municipal, commercial, and industrial water supply. Such diversion is proposed to occur at a peak rate of 150 cfs and a daily average 100 cfs. Under the proposal, water would be diverted for water supply from the forebay of the hydropower project. Water would then be treated and transmitted into a regional distribution system.

This *Report of Examination* addresses reservoir application R2-29935 to fill the Lake Tapps Reservoir. The ultimate application of this water to beneficial use is authorized under secondary Permit No. S2-29934. The investigative report for No. S2-29934 describes the beneficial use conditions of the water right. Report of Examination S2-29934 also includes a complete description of the project, protestant's concerns, and evaluation of the proponent's mitigation proposal.

INVESTIGATION:

The project site is located within the Puyallup-White River Watershed, Water Resource Inventory Area (WRIA) 10. The proposed water supply project would be located with, and use much of the existing infrastructure of PSE's White River Hydroelectric Project. The existing White River Hydroelectric Project diverts water from the White River at river mile 24.3 near the town of Buckley. Diverted water travels through the existing eight mile long diversion flowline consisting of flumes, canals, fish screens, five settling basins, and pipelines. Diverted water is then stored in Lake Tapps Reservoir, a manmade reservoir consisting of 13 dikes impounding water in natural topography that once held four small lakes. Lake Tapps has a surface area of 2,700 acres and active storage capacity of 46,700 acre-feet. Water surface elevations can range from a normal maximum of 543 feet above mean sea level (ft msl) to a minimum of 515 ft msl, which corresponds with the bottom of the outlet works.

The main outlet from Lake Tapps is the 12-foot diameter concrete tunnel leading to the forebay, penstocks, and ultimately powerhouse and turbines of the White River Hydroelectric project.

After water is released from the turbines it flows through a 0.5-mile long tailrace canal into the White River. The reach of the White River between the diversion dam at RM 24.3 and the tailrace at RM 3.6 is referred to as the Bypass Reach.

Downstream of the confluence the tailrace and White River, the White River continues for 3.6 miles before joining the Puyallup River; this reach of the White River is referred to in this Report of Examination (ROE) as the lower White River. Below the confluence with the White River, the Puyallup River continues for 10.4 miles before entering Commencement Bay in Tacoma.

Current Water Right Authorization

The applicant currently diverts water from the White River and impounds it in Lake Tapps Reservoir for hydropower production. The applicant's water right for hydropower is evidenced by claims filed in 1895 and 1901. In 1974 PSE filed Claim No. 160822 with the State under Ch. 90.14 RCW confirming PSE's interest to protect and utilize the water right for 2,000 cfs and 1,440,000 acre-feet/year.

This new permit will utilize the same diversion point and same Lake Tapps Reservoir impoundment, and will not divert or impound any more water than is currently diverted and impounded under the hydropower right.

Puget Sound Energy has applied for a hydro power license from the Federal Energy Regulatory Commission (FERC). The license will provide conditions for operation of the diversion of water for hydropower purposes, including instream flow conditions for the by-pass reach of the White River. The quantity of water diverted for this permit will be affected by these conditions.

Puget Sound Energy has agreed to operate the diversion dam to meet the new instream flow conditions required under the FERC license. Furthermore, regardless of the flows required in the FERC license, Puget Sound Energy has agreed to exercise the permit in a manner that will not divert water from the White River if minimum flows of 250 cfs are not met between February 1st and April 30th of each year.

Diversion Dam and Intake

The existing diversion dam for the hydropower water right is located at White River Mile 24.3, in the City of Buckley, and is an 11-foot-high structure consisting of a concrete and rock filled crib structure 352 feet long, with a 4 foot high and 7-foot-high flashboards on top of the crib structure. The spillway extends the entire length of the dam. The flashboard system normally raises the water level 7 feet above the crib structure to elevation 671 feet mean sea level (ft msl).

The concrete intake is located just upstream of the dam on the left bank of the White River, and contains two stony gates, each 13 feet high by 15.5 feet wide, separated by a concrete pier. The rack gearing is motor operated, with an emergency 4 horsepower gasoline engine drive. There is also a manual means of lowering the gates if both of the other systems fail.

The existing eight-mile-long diversion flowline consists of a series of flumes and canals lined with wood, concrete, or earth, five settling basins, and two 10-foot diameter pipelines.

A concrete and wood flume conveys water from the headworks to the flowline sedimentation basins over a distance of approximately 5,000 feet with a gradient of 7 feet to the mile. The concrete portion of the flume was constructed in 1986 and runs for approximately 1,700 feet between the headworks and the wood-lined canal. Two rock chutes are located in this section for removal of entrained rocks and gravels; one chute is located adjacent to the headworks and consists of an 80-inch-wide gate with a maximum opening of 3 feet, the other chute is located near the transition of the concrete canal to the wood canal. The flume transitions from concrete to a wood lining for the remaining 3,300 feet. The wood flume is approximately 28 feet wide and 9 feet high with an approximate capacity of 2,000 cfs.

Location of Impounding Structure

This permit will allow utilization of the existing impounding structure of Lake Tapps Reservoir in Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 21, 22, 23, 27 and 28, Township 19 N, Range 5 E.W.M.

The Lake Tapps Reservoirs is impounded by a series of 13 dikes ranging in length from a few hundred to a few thousand feet, and from a height of a few feet up to 40 feet. The reservoir, once a series of four small lakes (Lake Tapps, Lake Kirtley, Crawford Lake, and Church Lake), was created by the construction of the dikes and the diversion of water from the White River into the reservoir. Lake Tapps Reservoir is approximately 4.5 miles long and 2.5 miles wide. The reservoir has an area of 2,700 acres and a storage capacity of 46,700 acre-feet and a normal maximum pool elevation of 543 ft msl.

There are 13 dikes that impound the reservoir. The dikes contain approximately 600,000 cubic yards of material. Documentation developed during the construction of the dikes indicates that the topsoil was first stripped to the impervious strata (till) beneath each dike. Steamrollers were then used to prepare the foundation. Fill material, consisting of cemented gravels obtained from nearby excavations, was transported to the site by dump cars on railway trestles. Large scrapers and donkey engines were then used for placement of the fill. The dikes were then finished using horse-drawn slip scrapers and wheelers. Initial design specifications required that the dikes have a minimum crest width of 40 feet, upstream slopes of 2.5 horizontal to 1 vertical, and downstream slopes of 2 horizontal to 1 vertical.

Legal Description of Property on Which Water Is to Be Used

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Development Schedule

See Development Schedule of Permit No. S2-29934P, incorporated here by reference.

Investigation

The authority for granting a water right for diversion and storage is set forth in RCW 90.03.370, which provides:

> *All applications for reservoir permits shall be subject to the provisions of RCW 90.03.250 to 90.03.320. But the party or parties proposing to apply to a beneficial use for the water stored in any such reservoir shall also file an application for a permit, to be known as the secondary permit which shall be in compliance with the provisions of RCW 90.03.250 to 90.03.320.*

When applying for a reservoir permit, an applicant must give information related to the height of the dam and capacity of the reservoir and the uses to be made of the impounded waters. RCW 90.03.260.

Under WAC 508-12-260, a reservoir permit is required for a reservoir "adjacent to a stream channel when water will be required to fill the reservoir in addition to a constant diversion to keep it full." While Ecology's rules related to requirements for a reservoir permit do not

necessarily require a reservoir permit in this instance because "a constant diversion to keep it full" is not required, Puget Sound Energy agreed to file the application for a reservoir permit to confirm that water will hereafter be stored at Lake Tapps Reservoir for municipal, industrial, and commercial purposes, as well as for hydropower under existing claimed rights. Additionally, based on the flow augmentation plan described in the report of examination for the secondary permit No. S2-29934P, the reservoir will also be beneficially used for recreational purposes.

Water right applications for beneficial use of water are required to meet the four-part test as set forth in RCW 90.03.290. This statute requires the Department to investigate the application and issue a permit if it finds that:

(1) there is water available for appropriation,
(2) the use is beneficial,
(3) the proposed appropriation will not impair existing rights, or
(4) be detrimental to the public welfare.

These statements are applicable to the actual appropriation of water to the beneficial use. Therefore, the full definition and full description of the investigation are provided in ROE for permit No. S2-29934.

Water Available

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Beneficial Use

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Impairment of Existing Rights

This permit will not allow any additional diversion of water as determined above. This permit for the diversion and storage of water will be no more consumptive than the existing diversion and storage for the White River hydropower project at the existing point of diversion. The impairment analysis for the primary diversion from the White River and the secondary diversion for consumptive use of the water stored in Lake Tapps is set forth in the findings in permit No. S2-29934P, that authorizes such use.

Detriment to the Public Interest

The analysis and determination that the application of the water for municipal, industrial, and commercial purposes is not detrimental to the public welfare is provided in the findings and determination for permit No. S2-29934P.

In 90.54.020(4, 6) the legislature declared, as a fundamental policy for management of water, that the use of reservoirs for multi-purposes shall be a high priority for municipal, industrial, and commercial purposes. The legislature has furthermore stated that municipal water supply - for the region, on a whole - to benefit the public, generally is a fundamental water management goal 90.54.020(8).

RECOMMENDATIONS:

It is recommended that Applications No. R2-29935 be approved and a permit issued subject to the provisions below including the development schedule. Permit R2-29935 will authorize the impoundment of 72,400 acre-feet per year of water in Lake Tapps for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934.

PROVISIONS:

The Development Schedule in the Report of Exam for Permit No. S2-29934P is incorporated here by reference.
The Other Provisions and Conditions in the Report of Exam for Permit No. S2-29934P are incorporated here by reference.

The applicant shall pay permitting fees required for this permit prior to the issuance of the permit.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Surface Water Application Number R2-29935, subject to existing rights and the provisions above to authorize the impoundment of 72,400 acre-feet per year of water in Lake Tapps for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934.

Signed at Olympia, Washington, this _____ day of _____, 2003.

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

necessarily require a reservoir permit in this instance because "a constant diversion to keep it full" is not required, Puget Sound Energy agreed to file the application for a reservoir permit to confirm that water will hereafter be stored at Lake Tapps Reservoir for municipal, industrial, and commercial purposes, as well as for hydropower under existing claimed rights. Additionally, based on the flow augmentation plan described in the report of examination for the secondary permit No. S2-29934P, the reservoir will also be beneficially used for recreational purposes.

Water right applications for beneficial use of water are required to meet the four-part test as set forth in RCW 90.03.290. This statute requires the Department to investigate the application and issue a permit if it finds that:

(1) there is water available for appropriation,
(2) the use is beneficial,
(3) the proposed appropriation will not impair existing rights, or
(4) be detrimental to the public welfare.

These statements are applicable to the actual appropriation of water to the beneficial use. Therefore, the full definition and full description of the investigation are provided in ROE for permit No. S2-29934.

Water Available

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Beneficial Use

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Impairment of Existing Rights

This permit will not allow any additional diversion of water as determined above. This permit for the diversion and storage of water will be no more consumptive than the existing diversion and storage for the White River hydropower project at the existing point of diversion. The impairment analysis for the primary diversion from the White River and the secondary diversion for consumptive use of the water stored in Lake Tapps is set forth in the findings in permit No. S2-29934P, that authorizes such use.

Detriment to the Public Interest

The analysis and determination that the application of the water for municipal, industrial, and commercial purposes is not detrimental to the public welfare is provided in the findings and determination for permit No. S2-29934P.

In 90.54.020(4, 6) the legislature declared, as a fundamental policy for management of water, that the use of reservoirs for multi-purposes shall be a high priority for municipal, industrial, and commercial purposes. The legislature has furthermore stated that municipal water supply - for the region, on a whole - to benefit the public, generally is a fundamental water management goal 90.54.020(8).

RECOMMENDATIONS:

It is recommended that Applications No. R2-29935 be approved and a permit issued subject to the provisions below including the development schedule. Permit R2-29935 will authorize the impoundment of 72,400 acre-feet per year of water in Lake Tapps for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934.

PROVISIONS:

The Development Schedule in the Report of Exam for Permit No. S2-29934P is incorporated here by reference.
The Other Provisions and Conditions in the Report of Exam for Permit No. S2-29934P are incorporated here by reference.

The applicant shall pay permitting fees required for this permit prior to the issuance of the permit.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Surface Water Application Number R2-29935, subject to existing rights and the provisions above to authorize the impoundment of 72,400 acre-feet per year of water in Lake Tapps for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934.

Signed at Olympia, Washington, this _____ day of _____, 2003.

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office

The following page is a scanned copy of the page of the Report of Examination with the date and signature

necessarily require a reservoir permit in this instance because "a constant diversion to keep it full" is not required, Puget Sound Energy agreed to file the application for a reservoir permit to confirm that water will hereafter be stored at Lake Tapps Reservoir for municipal, industrial, and commercial purposes, as well as for hydropower under existing claimed rights. Additionally, based on the flow augmentation plan described in the report of examination for the secondary permit No. S2-29934P, the reservoir will also be beneficially used for recreational purposes.

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These statements are applicable to the actual appropriation of water to the beneficial use. Therefore, the full definition and full description of the investigation are provided in ROE for permit No. S2-29934.

Water Available

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Beneficial Use

See Report of Exam for Permit No. S2-29934P, incorporated here by reference.

Impairment of Existing Rights

This permit will not allow any additional diversion of water as determined above. This permit for the diversion and storage of water will be no more consumptive than the existing diversion and storage for the White River hydropower project at the existing point of diversion. The impairment analysis for the primary diversion from the White River and the secondary diversion for consumptive use of the water stored in Lake Tapps is set forth in the findings in permit No. S2-29934P, that authorizes such use.

Detriment to the Public Interest

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In 90.54.020(4, 6) the legislature declared, as a fundamental policy for management of water, that the use of reservoirs for multi-purposes shall be a high priority for municipal, industrial, and commercial purposes. The legislature has furthermore stated that municipal water supply - for the region, on a whole - to benefit the public, generally is a fundamental water management goal 90.54.020(8).

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The Other Provisions and Conditions in the Report of Exam for Permit No. S2-29934P are incorporated here by reference.

The applicant shall pay permitting fees required for this permit prior to the issuance of the permit.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Surface Water Application Number R2-29935, subject to existing rights and the provisions above to authorize the impoundment of 72,400 acre-feet per year of water in Lake Tapps for public water supply, including industrial and commercial purposes, and maintenance of the reservoir for recreational purposes, and for releases of water for instream flow needs as more fully described in Report of Examination for S2-29934.

Signed at Olympia, Washington, this 30th day of June, 2003.

Thomas Loranger
Water Resources Supervisor
Southwest Regional Office